BAKERRISK
LEARNING CENTER
COURSE CATALOG 2026

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Update: 9/21/2026

Dear Professional,

Thank you for your interest in our BakerRisk Learning Center 2026 Curriculum! It is my pleasure as the BakerRisk Learning Center Manager to provide you with an overview of what you can expect when you choose to take a course with BakerRisk:

- *Instructors are **Subject Matter Experts (SME)**: Our instructors are SMEs in their fields and are engineers and investigators who solve complex safety challenges. Their cumulative knowledge and personal experiences get poured directly back into the course material, providing students with a holistic and informative viewpoint.*
- ***In-Person and Virtual Trainings Offered:** To accommodate professionals & their organizations' needs.*
- ***Private, Customizable Trainings** upon request to support:*
  - *Specific content per company*
  - *Time zones for virtual trainings*
  - *Globally scalable*
  - *Locations of trainings*
- ***Certificates of Attendance:** To provide capability to add or share via a LinkedIn profile, if desired.*
- ***Alternative Language Capabilities:** All public trainings are offered in English, with sessions of Facility Siting & QRA Training also offered in Spanish.*

Please contact us regarding inquiries in other languages for private courses.

Within this evergreen course catalogue, you will find a curated selection of courses designed to enhance your knowledge, develop critical skills, and prepare you for future projects in these subject areas. We strive to utilize our expertise to reinforce your commitment to safety in each course we hold. Should you have any questions, are a training coordinator, or would like to discuss additional training topics, please do not hesitate to reach out to me at mdressendorfer@bakerrisk.com or visit our BakerRisk Learning Center website for more information.

Best Regards,

Mikaela Dressendorfer
Process Safety Consultant
Manager, BakerRisk Learning Center

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UPCOMING CLASSES	DATE	CLASS LENGTH	LOCATION
SIS/SIL Verification Training	September 23-24, 2026	2 Days	Houston, TX/Virtual
Battery Energy Storage System Hazards and Mitigation	September 29-30, 2026	(2) 1/2 Days	Virtual
Facility Siting & QRA Training - SPANISH	September 30-October 1, 2026	2 Days	Houston, TX/Virtual
Hazardous Area Classification	October 1, 2026	1 Day	Virtual
PHA/LOPA Training (with eLearning)	October 5, 2026	1 Day	Houston, TX
PHA/LOPA Training (with eLearning) & Hazards Awareness Demonstrations Combined	October 5-6, 2026	2 Days	Houston, TX/La Vernia, TX
Hazards Awareness (Testing Demonstrations)	October 6, 2026	1 Day	La Vernia, TX
FSS/QRA Training & Hazards Awareness Demonstrations Combined	October 6-8, 2026	3 Days	Houston, TX/La Vernia, TX
Facility Siting & QRA Training	October 7-8, 2026	2 Days	Houston, TX/Virtual
Ammonia Production and Storage Safety Training	October 13, 2026	1/2 Day	Virtual
Biofuels Risk Management: RNG	October 27, 2026	1/2 Day	Virtual

UPCOMING CLASSES	DATE	CLASS LENGTH	LOCATION
Fire and Gas Detection Mapping	November 10, 2026	1 Day	Virtual
Hydrogen Safety Training	November 11-12, 2026	(2) 1/2 Days	Virtual
Hazardous Area Classification	March 2, 2027	1 Day	Virtual

VIRTUAL

Ammonia Production and Storage Safety Training

Days: 0.5 PDH: 4 CEU: 0.4

Course Cost: Early $400 Normal $450

This half-day course focuses on understanding the major hazards associated with the production of ammonia. The primary objective is to provide the foundational information for understanding hazards associated with the production process and storage operation. It will also provide ways to assess and mitigate the hazards, and recommendations from safety professionals with over 30+ years of experience in the ammonia industry. This course is ideal for PSM managers and process safety engineers who are designing and/or operating an ammonia production facility, including green and blue ammonia production.

Simple Agenda of Training:

- Fundamentals of the hazards of ammonia
- Testing results of ammonia vapor cloud explosions
- Green and blue ammonia production from safety perspective
- Crucial studies for safe operation – design and construction
- Beyond the fence line – checklist for emergency response
- Future outlook of ammonia – green, blue, and overall

Instructors: Rachel Zhang, M.S., Dan Benac, P.E., CFEI, ASM Fellow, and Murtaza Gandhi, P.E., CFSE

ON REQUEST

Asset Integrity Training

Days: **2** PDH: **16** CEU: **1.6**

Course Cost: **Provided Upon Request**

This two-day asset integrity course will focus on the value creation potential of Asset Integrity Management (AIM), as measured through a risk reduction lens. This course will cover the asset integrity and reliability element of CCPS' Risk-Based Process Safety (RBPS) with reference to the elements of the U.S. OSHA PSM rule when relevant.

The course will include the following topics:

- Asset integrity background
  - CCPS guidelines
  - AIM incident data
- Asset integrity management
  - Business case
- AIM risk-based framework
  - Elements of RBPS
- Scope and definitions
- Management responsibilities
  - AIM procedures, roles, responsibilities
- AIM equipment selection
  - Equipment selection and register
  - Critical equipment
- AIM planning and scheduling
  - ITPM plans
  - Scheduling of ITPM tasks
  - Overdue and deferred ITPM tasks
- AIM task execution
  - Safety
  - Calibration
  - Test results
  - Operational readiness
- Deficiencies
  - Management
  - Temporary repairs
  - Rerating, repairs, alterations
- ITPM documentation and records
  - Equipment records and files
  - Test records and files
- Quality management
  - Design and fabrication
  - Materials receipt
  - Installation
- Course wrap-up and discussion
- Recap on concepts, definitions, elements, etc. to ensure understanding
  - Quiz on AIM standard requirements

Instructors: Dan Benac, P.E., CFEI, ASM Fellow, Mike Nugent, M.S. and Milo Kral, Ph.D., P.E.

VIRTUAL

Battery Energy Storage System Hazards and Mitigation

Days: **2 Half-Days** PDH: **8** CEU: **0.8**

Course Cost: **Early $500 Normal $600**

This two half-day course is intended to give participants an overview of the Lithium-ion battery components, primary failure modes of Battery Energy Storage Systems (BESS), and their consequences and associated mitigation techniques. In addition, the course will discuss the widely accepted test method for evaluating thermal runaway in BESS (UL 9540A) and the regulatory aspects of installation of stationary energy storage systems with a focus on Lithium-ion batteries (NFPA 855).

This course will benefit those in the BESS manufacturing and integration sector, BESS end-users, project managers, emergency response personnel, process safety personnel, or any battery enthusiasts. Having a basic knowledge of BESS is beneficial but not necessary.

The course will discuss the following elements:

- Overview of Lithium-ion battery chemistry
- Battery Energy Storage System (BESS) components
- Regulatory guidance on BESS installation (NFPA 855) and Thermal Runaway test (UL 9540A)
- Failure modes of Lithium-ion batteries
- Conducting Battery Hazard Analysis and FMEAs on BESS
- Consequences of catastrophic failure in BESS - thermal runaway, off gassing, fire, explosion, and toxic releases
- Quantifying explosion and thermal consequences and evaluating the impact on personnel and adjacent equipment
- BESS mitigation techniques including: fire mitigation measures and BESS enclosure structure analysis and methods to design new enclosures
- BESS Risk Management - a holistic approach, insurance risk aspects, and Emergency Response Planning

Instructors: Roshan Sebastian, EIT, M.S., CFPS, Gabe Shelton, P.E., M.S., Anibal Morones, PH.D., and Murtaza Gandhi, P.E., CFSE

VIRTUAL

Biofuels Risk Management (SAF)

Days: **0.5** PDH: **4** CEU: **0.4**

Course Cost: **Early $400 Normal $450**

This half-day course is intended to give participants an overview of risk management in the biofuels industry, with a focus on Sustainable Aviation Fuel (SAF). Each course will discuss the potential hazards associated with the production, storage, and transportation of SAF, methods to assess the consequence and risk of those hazards, as well as mitigation techniques used in the SAF industry.

This course will benefit those in the SAF production industry, project managers for SAF related capital projects, emergency response personnel, and process safety personnel.

The course will discuss the following elements:

- Introduction to Sustainable Aviation Fuel (SAF) and its properties
  - Includes feedstocks, byproducts, and products
- Overview of key hazards/safety challenges for different SAF production methods
- Examples of incident case studies including lessons learned
- Example safety studies that could be considered:
  - Process hazard analysis
  - Facility siting and QRA
  - Hazardous area classification
- Risk mitigation techniques
- Regulatory guidance for SAF facilities

Instructor: Alex Cardoso, P.Eng.

VIRTUAL

Biofuels Risk Management (RNG)

Days: 0.5 PDH: 4 CEU: 0.4

Course Cost: Early $400 Normal $450

This half-day course is intended to give participants an overview of risk management in the biofuels industry, with a focus on Renewable Natural Gas (RNG). Each course will discuss the potential hazards associated with the production, storage, and transportation of RNG, methods to assess the consequence and risk of those hazards, as well as mitigation techniques used in the RNG industry.

This course will benefit those in the biofuels production industry, project managers for RNG related capital projects, emergency response personnel, and process safety personnel.

The course will discuss the following elements:

- Introduction to Renewable Natural Gas (RNG) and its properties
- Overview of key hazards/safety challenges for different RNG production methods
- Example safety studies that could be considered:
  - Process hazard analysis
  - Facility siting and qualitative risk assessment (QRA)
  - Hazardous area classification
- Risk mitigation techniques
- Regulatory guidance for RNG facilities

Instructor: Alex Cardoso, P.Eng.

ON REQUEST

Blast Resistance Design
(Only for ERC Participants)

Days: **4** PDH: **32** CEU: **3.2**

Course Cost: **Provided Upon Request**

This four-day course will focus on the practical calculations of designing structures to withstand postulated blast load. This course will utilize the tools and analysis techniques developed by the Explosion Research Cooperative.

The course will include the following topics:

- Introduction to designing for VCE blast loads
- Introduction to BEAST and screening approaches
- Building damage levels - when to use and when not to use
- How blast resistant designed buildings are developed
- Intro to SDOF method and criteria
- ISADS
- Steel design
- Dynamic design of trusses
- Concrete design
- Masonry design
- Lateral resisting systems and foundations
- Windows and doors
- Blast intrusion into buildings
- Design of CMU upgrades
- Design of shield walls
- Tents and trailers
- Wrap up discussion – case studies

Instructor: Travis Holland, P.E., M.S.

NEW

VIRTUAL

Carbon Dioxide Capture, Transportation, and Utilization (CCUS) - Safety Training

Days: 0.5 PDH: 4 CEU: 0.4

Course Cost: Early $400 Normal $450

This half-day course will focus on providing the foundational information for understanding hazards associated with the CO_2 capture, transportation, and ways to assess and mitigate the hazards with CCUS.

The course will discuss the following elements:

- Introduction to carbon dioxide and its properties
- Key hazards in CCUS and safety considerations
- Example safety studies that could be considered:
  - Process hazard analysis
  - Facility siting and QRA
  - Transportation risk assessments
- Review of CCUS related incidents including lessons learned
- Emergency response strategies – shelter-in-place design and testing
- Overview of proposed regulations for CCUS facilities

Instructors: Murtaza Gandhi, P.E., CFSE, Yujing Ho, and Cameron Wilson

NEW

ON REQUEST

Design of Blast-Resistant Structures Training

Days: **5** PDH: **36** CEU: **3.6**

Course Cost: **Provided Upon Request**

The focus of this five-day course includes learning how to calculate blast pressure histories from a high explosive detonation (either internal or external), understanding the idealizations behind single degree of freedom (SDOF) models, understanding how to apply SDOF models to a variety of typical structural components, learning the principles of quantity-distance siting, gaining hands-on experience with commonly used blast loading and analysis software, and students will become familiar with the requirements of UFC 3-340-02.

The course will include the following topics:

- Airblast
- Quantity-Distance Siting
- Fragments and Debris
- Dynamic Structural Analysis
- Concrete Structures
- Steel Structures
- Masonry Structures

Instructor: David Bogosian, P.E.

NEW

Dust Hazard Analysis and Hazardous Area Classification Training

VIRTUAL

Days: 1 PDH: 8 CEU: 0.8

Course Cost: **Early $650 Normal $750**

This one-day course provides an overview on the fundamentals of combustible dust and hazardous area classification (HAC) and how the two concepts are combined in a combustible dust HAC study. Through this course, participants will gain an understanding of the current regulatory climate with regards to performing a dust HAC. Workshop examples will be discussed to allow for better understanding and a comparison of different standard methodologies. This course is ideal for PSM managers and process safety engineers who work on projects that include or at an operating facility that processes/stores combustible dust materials..

This one-day training program will provide instruction on:

- Fundamentals of combustible dust
  - How/why dust fires and explosions occur
  - Importance of housekeeping
- Dust Hazards Analysis (DHA)
  - Importance of DHA for HAC
  - DHA method
    - Prescriptive
    - Performance based
- Fundamentals of HAC
  - Definitions
  - Importance of HAC
  - Methods of dust HAC
    - NFPA 499
      - Definitions
      - Cloud vs layer
      - Division and zones
      - Groups
      - Housekeeping

NEW

- How to conduct a dust HAC study
  - NFPA 499 method
    - Step 1: Need for classification
    - Step 2: Gathering information
    - Step 3: Selecting appropriate classification diagram
    - Step 4: Determining the extent of classification
    - Step 5: Verify compliance of equipment in classified areas
- Workshop
  - NFPA 499 method
    - One example with Groups E, F, and G material using a representative facility
  - IEC 60079-10-2 method
    - One updated example from NFPA 499 using IEC method with the same representative facility. With the focus on NFPA 499 method, this example will only show how the contours would look different with IEC and not show any calculations or details

Instructors: Murtaza Gandhi, P.E., CFSE, Phil Parsons, CFEI, Darren Malik, P.E., M.S., CFEI, Alex Cardoso, P.Eng., and Amy Theis

ON REQUEST

Emergency Management Training

Days: 1 PDH: 8 CEU: 0.8

Course Cost: **Provided Upon Request**

The focus of this one-day course will be on explaining elements of a sample real-life Crisis Emergency Response Plan. Practical tools and industrial examples will be presented.

The course will include the following topics:

- Requirements / roles / responsibilities
- Classification / level of incidents and other definitions
- Emergency management vs. crisis management and the transition
- Non-traditional "emergencies" (operational, capital projects, company reputation, business continuity, potential incidents, etc.)
- Risk exposures
- Incident examples (emergency vs. crisis)
- Unified incident command system
- Emergency response teams
- Response levels
- Emergency / crisis plans
- Coordination among governmental, corporate, plant, community, and client plans
- Prepare, prevent, respond, recover
- Plan elements
- Examples of plan elements for team members
- Plan activation stages
- Communication planning
- Control centers
- Testing, training, drills, and continuous improvement

Instructors: Mike Broadribb, C.Eng., Eric Freiburger, P.E., Duane Rehmeyer, P.E., M.S., CFEI, CFII

ON REQUEST

Explosion Fundamentals & **Blast Load Prediction**

Days: **2** PDH: **16** CEU: **1.6**

Course Cost: **Provided Upon Request**

This two-day course focuses on the fundamentals of explosions and blast load predictions. The course provides exposure to a range of explosion types, with a focus on vapor cloud explosion (VCE) phenomena. Blast load prediction techniques for VCEs are covered in detail, and a summary of bursting pressure vessel (BPV) blast load prediction methods is provided.

The course will include the following elements:

- Overview of explosions
- VCE blast load prediction methods
- VCE blast load prediction example cases
- BPV blast load prediction methods
- Other VCE blast load topics (blast walls, door blast shields, clearing and infiltration)

Instructor: Kelly Thomas, Ph.D., CFEI

IN PERSON
OR VIRTUAL

Facility Siting & QRA Training

Days: 2 PDH: 16 CEU: 1.6

Course Cost: Early $1,500 Normal $1,725

This two-day course focuses on the fundamentals of Facility Siting Studies (FSS), Quantitative Risk Assessments (QRA), and mitigation techniques. The primary objectives are to provide a thorough foundation and knowledge of the inputs, methodologies, and typical types of results for FSSs and QRAs. It will also provide knowledge of how QRAs can be used to identify and prioritize risk mitigation strategies to make informed and effective risk mitigation decisions. This course is ideal for PSM managers, process safety engineers, facility siting coordinators / SMEs, and anyone involved in the facility siting decision-making process.

The course will include the following elements:

- FSS / QRA regulations and industry guidance
- Hazard identification and hazard definition
- Discharge and dispersion calculations
- Occupant vulnerability (OV) determination
- Building analysis
- Outdoor area analysis
- Congestion / confinement theory and modeling
- Explosion calculations
- Risk analysis
- Frequency analysis
- Occupancy analysis
- Overview of risk measures and criteria
- Overview of consequence results
- Risk results
  - Developing and evaluating risk refinements and mitigation options
  - Making risk-based decisions
  - Assessing risk for abnormal operations (turnaround, etc.)

Instructors: Josh Bruce-Black, M.S., Dr. Rafa Callejas-Tovar, P.E., and Rachel Zhang, M.S.

VIRTUAL

Fire and Gas Detection Mapping

Days: **1** PDH: **8** CEU: **0.8**

Course Cost: **Early $650 Normal $750**

This one-day course focuses on the fundamentals of fire and gas detector mapping and layout. The objective of a fire and gas detector analysis is to provide a minimum number of flammable and toxic gas detectors, and flame and heat detectors to maximize detector coverage of unwanted releases or fires. This course covers point and line of sight gas detectors, as well as UV/IR flame detectors and heat detectors. This training will focus on scenario coverage based on consequence and risks of the various hazards.

The primary objectives of the course are to provide a foundation of fire and gas detection layouts, comparison of the various pertinent guidance documents, and conduct a workshop for performing detection mapping using BakerRisk's F&GTool© software. This course is ideal for PSM managers, process safety engineers, electrical and instrumentation/control engineers/SMEs, and anyone involved in the fire and gas detection decision-making process.

The course will include the following elements:

- Introduction to fire and gas detection
- Fire and gas detection philosophy
- Types of fire and gas detectors (including testing videos)
- Regulatory and industry guidance for fire and gas detector layouts including ISA TR84.00.07
- Workshop using consequence and risk-based fire and gas detection study
  - Release modeling
  - Obstructions
  - Coverage adequacy
- Prioritization of fire and gas detector placement (based on QRA results and using the method described in ISA TR84.00.07)

Instructors: Murtaza Gandhi, P.E., CFSE and Rebecca Fritz, CFEI

NEW

IN PERSON

Fire Protection and Emergency Responses Fundamentals

Days: 2 PDH: 16 CEU: 1.6

Course Cost: **Provided Upon Request**

This two-day course will provide attendees with a foundational understanding of the importance of proper design and implementation of fixed fire protection systems in conjunction with effective emergency response resources–specifically in high-hazard industries such as energy, chemical/petrochemical, and related fields.

The course discusses the importance of understanding the relationship between fixed systems and emergency response time / effectiveness. In addition to reviewing lessons-learned from a case study review, the course will provide attendees with an understanding of how to evaluate the adequacy and reliability of fixed and mobile firefighting assets and other fire emergency response resources. The course also covers best practices for emergency response planning. Training is designed for the target audience of fire and safety professionals, insurance risk engineers, design engineers, and others interested in a better understanding of best practices in fire protection and fire consequence mitigation.

The course will include the following elements:

- Introductory topics
- Fire protection basics
- Advanced methods for fire protection evaluation
- Emergency response fundamentals
- Assessing and integrating third-party response capabilities
- Emergency response planning
- Case study review: fire protection and emergency response lessons-learned

Instructors: David Black, ARM, Dan Bushey, CSP, and Brian Norrie, M.S.

VIRTUAL

Hazardous Area Classification Training

Days: **1** PDH: **8** CEU: **0.8**

Course Cost: **Early $650 Normal $750**

This one-day course focuses on the fundamentals of Hazardous Area Classification (HAC), also known as Electrical Area Classification (EAC). The objective of an HAC analysis is to minimize the uncontrolled ignition of flammable or combustible material in air by electrical equipment or hot surfaces, that could lead to fires or explosions resulting in possible equipment and property damage, as well as potential loss of life. The primary objectives of the course are to provide a foundation of hazardous area classification, discuss the standards most typically used in industry, and learn how to perform an HAC study using BakerRisk's patented HACTool© software.

The course will include the following elements:

- Introduction to Hazardous Area Classification
- Basics of the fire triangle (for liquids/gas), dust explosion pentagon (for dust), and material properties
- Regulatory and industry guidance for completing an HAC study
- Hands-on workshop on performing an HAC study with NFPA 497
- Building design related to HAC (analyzer buildings, control rooms, electrical MCCs, shelter-in-place buildings)

Instructors: Murtaza Gandhi, P.E., CFSE and Stuart Powell

IN PERSON

Hazards Awareness Course
(Testing Demonstrations)

Days: 1 PDH: 8 CEU: 0.8

Course Cost: **Early $1,750** **Normal $2,000**

HAZ

Visit the Wilfred E. Baker Test Facility just outside of San Antonio to witness actual loss of containment events/consequences. Feel the heat of a jet fire on your face and the pressure from a vapor cloud explosion on your chest! In the Hazards Awareness Course, you'll learn about actual incidents that have shaped our industry and discuss the lessons learned. You will return to work with a new understanding of how hazards become incidents.

The one-day training program will provide these demonstrations:

- Gas dispersions (orifice, flange, PSV)
- PSV release
- Jet fire (fire and gas)
- Flash fire (with FRC vs. streetwear)
- Vapor cloud explosion
- Vented deflagration

Anyone who works on projects or operations with flammable, toxic, fire, or explosion hazards present.

What do course attendees say about our course?

"The Hazard Awareness Course is a must for all leaders and technical experts working in the area of Process Safety & Risk." Chevron, Senior Quantitative Risk Engineer

"The most interesting, relevant and vivid training that I have ever received!" Cheniere Energy, Engineer

Instructors: Jay Idriss, P.E., CFEI, Darren Malik, P.E., M.S., CFEI, Nolan Gajeski, and Brad Horn, EIT, CFEI, CSP, CIT

ON DEMAND

How to Conduct a DHA to Meet NFPA 660

Days: **1** PDH: **8** CEU: **0.8**

Course Cost: **Provided Upon Request**

This one-day course focuses on the fundamentals of combustible dust hazards and associated mitigation techniques. In addition, the course will cover the current regulatory climate with regards to performing dust hazard assessments, as well as the legal ramifications of incurring a combustible dust related incident.

The course will include the following elements:

- Combustible dust fire and explosion characteristics – how do they manifest?
  - Case studies
  - Combustible dust 101
  - Regulatory requirements for facilities handling combustible dusts
- Dust hazards analysis
  - Overview of NFPA 660
  - Introduction to DHA methodology
  - Example DHA Sessions
- How do I know if my dust is explosive?
  - Dust testing
- Dust explosion fire and explosion protection solutions
- Equipment evaluation for provision of explosion protection
  - What you need to know
- Explosion protection system deficiencies – as identified through performing DHA

Instructors: Phil Parsons, CFEI, Alexandre Cardoso, P. Eng., Amy Theis

VIRTUAL

Hydrogen Safety Training

Days: **2 Half-Days** PDH: **8** CEU: **0.8**

Course Cost: **Early $500 Normal $600**

Hydrogen is anticipated to play a key role in the energy transformation, but with great power comes great responsibility to handle it safely. These two half-day sessions will provide an overview of the hydrogen properties that drive its fire/explosion hazards in the event of a release as well as the unique material compatibility challenges it presents. This course will include workshop activities around hydrogen facility siting and safety systems, hazard analysis, discussions of applicable hydrogen codes and best practices, and examples of past hydrogen incidents. This training is designed for the target audience of project managers, design/process engineers, and site health and safety advisors, but anyone involved in developing hydrogen projects and operations is anticipated to benefit from the material covered and encouraged to attend. A course survey will be provided upon sign-up to help focus workshop activity on hydrogen uses of interest.

This course includes the following topics:

- Hydrogen hazards and safety considerations
- Hydrogen material compatibility
- Hazard assessment strategies, including Process Hazard Analysis (PHA); Facility Siting Study/Quantitative Risk Assessment (FSS/QRA); and Hazardous Area Classification (HAC)
- Applicable standards and regulations, including API, NFPA, ASME, etc.
- Lessons learned from past hydrogen incidents investigations
- Hand-on exercise in utilizing various assessment strategies to support your future hydrogen projects

Instructors: Peter Diakow, CFEI, Murtaza Gandhi, P.E., CFSE , Milo Kral, PH.D., P.E., Darren Malik, P.E., CFEI, Kelly Thomas, PH.D., CFEI, and Fika Edelia

IN PERSON

Incident Investigation Training

Days: **2** PDH: **16** CEU: **1.6**

Course Cost: **Early $1,750** **Normal $2,000**

Incidents: you hope that they never happen, but you need to be prepared in case they do. In this course, you learn how to perform a scientifically rigorous incident investigation based on BakerRisk's vast experience in this area across a broad range of industries. Through a range of active, hands-on sessions, you will practice techniques for hypothesis development, witness interviews, timeline creation, and root cause analysis, among others.

The two-day training program will provide instruction on:

- Classification of incidents
- Establishment of incident investigation teams
- Execution of a systematic and analytical investigative process
- Identifying, documenting, and managing pertinent physical conditions and issues (i.e., evidence identification, collection, and preservation)
- Use of scientific methodology to determine incident origin and causal factors (e.g., timeline development, hypothesis validation)
  - Overview of steps to get to root cause
  - Introduction to investigations
  - Investigation process and environment
- Investigation approach
- Investigation procedures: initial response
- Systematic data collection
- Document collection
- Witness interviews and statements
  - Hypothesis development and analysis
  - Root cause analysis
  - Corrective actions
  - Reports
- Bringing the investigation to closure

Instructors: Quentin Baker, P.E., MBA, CFEI, CFII and Eric Freiburger, P.E.

IN PERSON

Incident Scene Documentation & **Evidence Collection**

Days: **1** PDH: **8** CEU: **0.8**

Course Cost: **Early $1,225** **Normal $1,375**

This one-day course focuses on properly documenting an incident scene, and collecting and preserving evidence, both physical and digital. This course is a complement to our two-day incident investigation course. Prompt and thorough documentation of a scene before weathering or alteration provides valuable data to investigators. Items identified by investigators as evidence must be documented, collected, and preserved using methodologies consistent with accepted standards and guidelines.

Participants will be given both classroom instruction and field exercises to learn and practice scene documentation and evidence collection. This will include developing procedures to ensure proper and adequate documentation of the incident scene and evidence to be collected. The course will provide techniques for collecting, logging, and preserving evidence based on industry accepted standards and years of evidence collection experience by BakerRisk. A mock explosion at our test site will provide the scene and evidence for field exercises. This course is ideal for evidence technicians, engineers, managers, and investigators who are involved in hands-on work in scene investigation and evidence collection, and managers and legal counsel who are involved with incident investigations.

The course will include the following elements:

- Presentations on standards for:
  - Scene documentation
  - Physical evidence collection
  - Digital evidence collection
- Scene and evidence documentation techniques
- Protocol development and usage in evidence collection
- Preservation options for evidence
- Hands-on exercises in scene documentation and evidence collection that includes a controlled explosive event

Instructors: JR Montoya, CFEI, CFII, Jay Idriss, P.E. CFEI, and Emiliano Vivanco, M.Sc.

IN PERSON

Introduction to **Natural Hazard Risk Assessments**

Days: **1** PDH: **8** CEU: **0.8**

Course Cost: **Early $650 Normal $750**

This one-day course is designed to introduce various natural perils that commonly threaten facility assets and associated business operations. In addition to demonstrating means to quantify these exposures, the course will overview typical mitigative solutions and outline critical emergency response plan elements. Training is designed for the target audience of project managers, design engineers, and natural hazard response plan administrators; however, anyone interested in better understanding natural perils, enhancing resilience, or improving response plans will benefit from the material covered.

Instructions will be provided on:

- Discussion of notable natural catastrophe losses and associated trends
- Deterministic approaches to quantify natural hazard exposures with mitigation techniques
  - Severe convective storms
    - Tornado
    - Hail
    - Lightning
  - Coastal windstorm
  - Flood
    - Fluvial (riverine)
    - Storm surge
    - Pluvial (surface water)
  - Winter storm
    - Snow/ice accretion
    - Freeze
  - Earth movement
- Incorporating natural hazard exposures into project designs
- Best practices for natural hazard emergency response plans and why most severe weather plans are insufficient
  - Critical plan elements
  - Roles/responsibilities
  - Training

Instructor: Brian Norrie, M.S.

IN PERSON
OR VIRTUAL

Introduction to Process Safety Management (PSM)

Days: **2** PDH: **16** CEU: **1.6**

Course Cost: **Early $1,500** **Normal $1,750**

This course will focus not only on understanding hazards and risks but also the linkage to the key risk control systems necessary for sustainable safe operation.

The outcomes include:

- Understanding the key factors of process safety management
- Understanding hazard identification, risk assessment, and management of risk
- Understanding the process safety culture and commitment
- Understanding how to implement sustainable improvements in process safety management

This course will include the following topics:

- Process safety awareness
- What is process safety
- The essentials of managing process safety
- Process safety information
- Dust explosions
- Gas / vapor explosions
- Chemical reaction hazards and thermal stability of materials

- Ignition sources including electrostatic hazards
- Practical process hazard analysis
- Protection against deflagration (vapors and powders)
- Classification and management of hazardous areas
- Creating a management of change program
- Pre-start up safety reviews (PSSRs)
- Process safety metrics / leading and lagging indicators
- Lessons from accidents in the process industries

Instructors: Mike Broadribb, C.Eng., Jeff Dancey, P.Eng., Duane Rehmeyer, P.E., M.S., CFEI, CFII, Larry Bowler, P.E., Eric Freiburger, P.E.

IN PERSON
OR VIRTUAL

Managing Fire Protection Resources

Days: 1 PDH: 8 CEU: 0.8

Course Cost: **Early $650 Normal $750**

This one-day course focuses on managing fire protection resources including fixed equipment readiness, maintaining proper documentation, and typical roles/responsibilities within a facility management structure.

The objective of the course is to review RAGAGEP and other industry best practices related to management of fire protection resources, relate the various tasks to the Functional Responsibilities within a facility organization, and understand how other RAGAGEP (process safety information, management of change, for instance) relates to fire protection systems.

This course is ideal for PSM managers, incident commanders, fire technicians, emergency response team leads, and anyone involved in managing fire protection assets for an industrial facility.

The course will include the following elements:

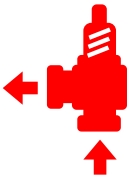
- Introduction to fixed fire protection inspection, testing, maintenance, and repair (ITMR)
  - *Equipment including monitors, firewater mains, fire pumps, water spray/deluge, foam, and sprinkler systems*
  - *Fireproofing*
- Typical roles and responsibilities related to fixed protection systems
  - *PSM/Safety manager*
  - *Emergency response team leadership/staff*
  - *Operations*
  - *Maintenance*
- Maintaining appropriate documentation for fixed systems, including firewater plot plans, pre-plans, system design documents, drainage drawings, equipment inspection policies and procedures, equipment test results
- Regulatory and industry guidance for fire protection including NFPA and API
- Best practices for equipment performance testing and auditing test results
- Resolving organizational conflicts related to ITMR responsibilities for fire protection

Instructor: David Black, ARM

NEW

ON REQUEST

Overpressure Protection and Pressure Relief Devices



Days: **2** PDH: **16** CEU: **1.6**

Course Cost: Provided Upon Request

This two-day course is intended to give participants an overview of equipment overpressure protection and the design, sizing, selection, installation, and maintenance of pressure relief devices and systems. Participants will learn techniques for identifying process overpressure scenarios. They will also learn about the overall life cycle of pressure relief devices, including maintenance/inspection/testing programs, compliance auditing, and techniques for evaluating pressure relief systems in Process Hazard Analysis (PHA) and Layers of Protection Analysis (LOPA). This course is ideal for technical staff that will be responsible for the design, sizing, selection, installation, or maintenance of pressure relief devices and systems.

The course will include the following elements:

- Applicable codes, standards, and references
- Pressure relief terminology
- Basic & advanced overpressure scenarios
- Pressure relief device sizing & selection
- Pressure relief device installation
- Pressure relief device maintenance, inspection, and testing
- Compliance auditing of pressure relief systems
- Pressure relief valve reliability & failure on demand
- Evaluation of pressure relief systems in process hazard analysis (PHA)

Instructor: Todd Drennen, P.E.

IN PERSON
OR VIRTUAL

PHA / LOPA Training

Days: 3 PDH: 24 CEU: 2.4

Course Cost: Early $1,275 Normal $1,500

This three-day course is intended to give participants an overview of the PHA / LOPA process by teaching techniques and tools to assist in guiding teams through the qualitative risk analysis process.

This course includes the following topics:

- Introduction to HIRA techniques
- Hazard identification (HAZID)
- What-if analysis and checklists
- HAZOP method review
- Preparation, Facilitation, and PHA Variants
- LOPA method review
- Mock sessions practicing analysis methods

Instructors: Murtaza Gandhi, P.E., CFSE, Todd Drennen, P.E., and Rob Magraw, M.S.

ON REQUEST

Pressure Test Safety Training

Days: **1** PDH: **8** CEU: **0.8**

Course Cost: Provided Upon Request

This one-day course will provide a high level overview of potential hazards associated with high pressure systems. Topics covered include applicable codes (ASME, UK HSE, etc.), general guidelines, recommended practices, best practices, recent developments, and examples of past incidents.

This course includes the following topics:

- Pressure testing hazard awareness
- Possible hazards
- Developments
- Incidents
- Examples
  – Introduction to pressure testing hazards
- Types / sources of hazards
  – Evaluation process
- Applicable codes and standards
  – Introduction to structural response
- How blast design differs from conventional design
- Specifying response / damage criteria
- Owner / consultant roles and responsibilities

Instructor: Matt Edel, P.E., M.S., MBA, CFEI

ON REQUEST

Process Safety Culture: Building an Executive's Safety Knowledge

Days: **0.5** PDH: **2-4** CEU: **0.2-0.4**

Course Cost: **Provided Upon Request**

This course is intended to provide your company's senior/executive leaders with an understanding of the importance of commitment to and maintaining a strong Process Safety culture.

The course includes the following topics:

- Develop an understanding of the high-level key factors of process safety management (PSM).
- Learn how to incorporate management of hazard identification, risk assessment, and management of risk into a PSM program.
- Build an awareness of the importance of developing a safe operational culture.
- Acquire knowledge on how to implement sustainable improvements in process safety managementIntegrating process safety alongside business objectives

Instructors: Jeff Dancey, P. Eng. and Eric Freiburger, P.E.

ON REQUEST

Protective Structures
Assessment and Design

Days: **2** PDH: **16** CEU: **1.6**

Course Cost: **Provided Upon Request**

This two-day course focuses on applying the results of Facility Siting Studies (FSS) and Quantitative Risk Assessments (QRA) to design new and upgrade existing buildings at your facility to meet established risk criteria. The primary objectives are to provide knowledge of the drivers behind occupant vulnerability from explosion, thermal, and toxic events and what engineering design measures can be put in place to reduce occupant vulnerability. This course is ideal for capital projects managers, process safety engineers, facility siting coordinators, and project engineers who have been tasked to action building projects.

This course will include the following topics:

- Review of historical incidents
- Blast damage models
- Blast occupant vulnerability
- Thermal occupant vulnerability
- Toxic occupant vulnerability
- Prioritization of mitigation measures
- Benefits of refined engineering models
- New building vs. upgrades
- Blast resistant design basics
- Thermal shelter-in-place considerations
- Toxic shelter-in-place considerations
- Engineering designs to reduce risk
- Developing a specification for risk reduction
- How to avoid pitfalls in the design process
- Implementation of the engineering design

Instructor: Travis Holland, P.E., M.S.

ON REQUEST

Risk-Based Process Safety Fundamentals

Days: **2** PDH: **16** CEU: **1.6**

Course Cost: **Provided Upon Request**

Major industrial accidents involving the release of hazardous materials present a risk to the facility and local communities. Mechanical breakdown, fire, explosion, and toxic dispersion are just a few of the consequences of potentially catastrophic failures in process operations, which, if unchecked, can escalate to multiple injuries and fatalities, property damage, business losses, and environmental impact. The avoidance of process incidents is crucial to success in our industry. It has been demonstrated that a holistic management system comprised of several critical process safety activities is required to prevent, minimize, and recover from loss of containment incidents. Managing risk is central to these activities. Excellence in process safety can also lead to higher availability, productivity, and profit.

This course builds on, and complements, a market based management initiative, and introduces process safety systems and concepts that have been effective across industry. A key focus throughout the course is that hazards and risks should be understood, and then managed by 'doing what is right' rather than slavishly following regulatory compliance alone.

The course is intended to teach process safety, risk management, and asset integrity concepts to personnel involved in design, operations, maintenance, and field safety. It is ideally suited to all discipline engineers, operations supervisors, and EHS professionals, especially new employees. Note that it may be too basic for experienced process safety engineers. The course consists of a mix of presentation tools (PowerPoint, video), exercises, and discussion.

The course includes the following topics:

- Accident theory with relevant case studies
- Physical and process hazards
- Loss prevention principles in design and operations
- Inherently safer systems
- Loss of containment events
- Fire, explosion, and toxic release
- Facility siting, human factors, mechanical integrity, and metallurgy considerations instrumentation
- Failure and loss
- How to identify and gauge risk
- Risk tolerance and acceptance – Risk matrix
- The ALARP concept
- Risk management framework
- Risk assessment process
- Facilitation exercises
- How to establish risk controls and safeguards
- Risk communication

Instructors: Mike Broadribb, C.Eng., Jeff Dancey, P.Eng., Duane Rehmeyer, P.E., M.S., CFEI, CFII, and Larry Bowler, P.E.

IN PERSON
OR VIRTUAL

SIS/SIL Verification Training

Days: **2** PDH: **16** CEU: **1.6**

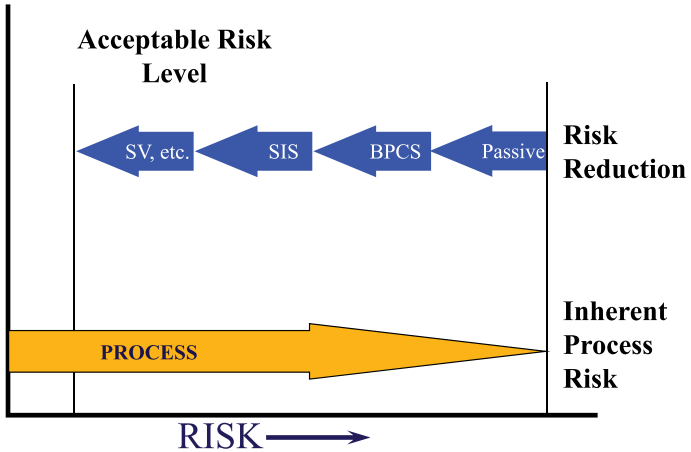
Course Cost: **Early $1,500** **Normal $1,725**

ISA84 and IEC61511 have developed Safety Instrumented Systems (SIS) standards for implementation of SIS worldwide. Many of the requirements have changed recently or are in the process of changing. Beginners, intermediate, or advanced practitioners of SIS can gain value and advance their knowledge in this area by attending this course. You will learn the basics of SIS, regulatory requirements around designing and implementing safety systems, and how to perform calculations to meet the Safety Integrity Level (SIL) target and generate deliverables for systems integrator to program the system. The course goes through numerous examples of various designs, and advantages and disadvantages of those approaches as experienced by SIS experts with extensive implementation experience. This course is beneficial for process safety coordinators, HSE managers, and controls and process engineers to understand the value of having properly designed safety systems and generate best practices for their organizations as they develop new SIS programs or enhance existing ones.

The course includes the following topics:

- Overview of SIS requirements
- Identifying SIFs and SIL requirements
- PM overview of SIL selection techniques (LOPA, risk graph)
- Preparing a safety requirement specification (SRS)

- Failure modes and failure rates SIL calculation basics using simplified equations (Probability of failure on demand – PFD)
- Calculating PFD of safety instrumented functions
- SIL calculation workshop
- Management of change (MOC) of SIS
- Test plan development



Instructors: Murtaza Gandhi, P.E., CFSE, Todd Drennen, P.E., and Rob Magraw, M.S.

Customized Courses
Flexible Delivery Options

Days: **Varies** PDH: **Varies** CEU: **Varies**

Course Cost: **Varies**

BakerRisk's Private Process Safety Training offers industry-leading, customizable process safety courses designed to meet the specific needs of companies within oil & gas, petrochemical, chemical, pharmaceutical, food & beverage, industrial, and energy among other industries. Whether delivered on–site, virtually, or in hybrid formats, our training equips your workforce with the skills needed to reduce risk, improve safety compliance, and strengthen operational performance.

Why Choose Private Training with BakerRisk

- Customized to you
  - *Training content is tailored to your site-specific hazards, risk profile, operations, and workforce experience.*
- Real-world relevance
  - *Courses incorporate examples from your process (e.g.,: using your risk matrix, etc.), incident history, and operational examples ensuring high-impact learning that applies directly to your environment.*
- Built to stick
  - *Interactive case studies, competency assessments, and scenario-based workshops improve retention and accelerate behavior change.*
- Taught by practicing experts
  - *Sessions are delivered by engineers and investigators who solve complex safety challenges, not generalist instructors.*
- Globally scalable
  - *Flexible delivery models scale from a single facility to regional or global rollouts, across time zones and teams.*
- Compliance-centric design
  - *Training aligns with OSHA, EPA, NFPA, API, CCPS, and IEC standards supporting audit-readiness and reducing regulatory risk.*
- Supports risk engineering and insurance goals
  - *Demonstrates proactive risk reduction for insurers and internal risk engineering teams positioning your operations for premium discounts or improved coverage.*

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