

PRINCIPLES OF PROCESS HAZARD ANALYSIS (PHA)

Principles of PHA help participants to gain an understanding of the regulatory requirements governing the performance of PHA and the techniques acceptable to OSHA and EPA. Guidance is provided on selecting PHA techniques and participating in a PHA, and each of the techniques acceptable to OSHA and EPA are described with examples. Attendees participate in the performance of demonstration PHAs led by the course instructor using the HAZOP and What-if techniques.

After completing this course, participants are well prepared to serve as members of PHA teams or to begin team leader training. This course is recommended as a prerequisite for Part 2 (PHA for Team Leaders) and Part 3 (Revalidation and Use of PHA's) of the PHA Series.

OBJECTIVE: Learn how to satisfy the process hazard analysis requirements of OSHA's Process Safety Management standard 29CFR 1910.119, and EPA's Risk Management Program Rule 40 CFR Part 68.

DIRECTED TO: Individuals leading or participating in process hazard analysis studies, process safety coordinators and managers, plant management, operations and maintenance staff.

PREREQUISITE: None

COURSE CONTENTS:

- Overview of PSM
- Overview of PHA
- PHA Regulatory Requirements
- Guidelines for PHA Participants
- "What-if" and "What-if"/Checklist Studies
- HAZOP Studies
- Failure Modes and Effects Analysis
- Other PHA Methods - Checklist, Fault Tree Analysis

DURATION: One day, 0.7 CEUs awarded

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PHA FOR TEAM LEADERS

May 7-8-9 \$1495

PHA for Team Leaders helps prepare leaders of process hazard analysis study teams. In addition to receiving expert instruction on the technical and managerial procedures involved with leading a PHA team, you'll form a study team with other participants and take turns leading a team. This exercise is overseen by instructors who will give feedback on your performance. Upon completing this course you will receive certification of training sufficient to satisfy OSHA's requirements for PHA team leaders.

OBJECTIVE: Learn to organize and lead process hazard analysis studies using the HAZOP and "What-if" techniques. Participants discover the tactics and success factors that help ensure a successful study.

DIRECTED TO: Engineers and others responsible for leading PHA studies.

PREREQUISITE: A thorough understanding of PHA regulatory requirements and a detailed knowledge of either the HAZOP or What-If study technique.

COURSE CONTENTS:

- Preparing and Organizing PHA Studies
- Subdividing the Process for Study
- Design Intent, Parameters and Deviations
- Completing the PHA Worksheet
- Meeting Regulatory Requirements
- Leadership Skills for Managing the Team

- Management of PHA Studies
- Performing PHAs on Procedures
- Performing PHAs for Batch Processes
- Human Factors in PHAs
- Facility Siting in PHAs
- Quality Control in PHA Studies
- PHA Report Preparation
- Managing the Follow-Up of PHA Results

DURATION: Three days, 21 CEUs awarded

PHA REVALIDATION

May 14 \$495

This "graduate level" course teaches participants how to revalidate previous PHAs in accordance with the OSHA PSM and EPA RMP regulations. Participants will learn the best and most effective approaches to use in PHA updates and revalidations. This course provides information on recent regulatory interpretations and clarifications to assist in the identification and correction of possible omissions and deficiencies in the previous PHA.

OBJECTIVE: Explain how to revalidate existing PHAs to account for process modifications and omissions and deficiencies in the previous PHA.

DIRECTED TO: Managers and team leaders responsible for satisfying regulatory requirements for PHA, including PHA revalidation.

PREREQUISITE: A thorough understanding of PHA regulatory requirements and experience or training as a PHA team leader.

COURSE CONTENTS:

- Overview of PHA Revalidation
- Planning PHA Revalidations
- Conducting and Documenting PHA Revalidations
- Regulatory Update on PHA

DURATION: One day, 0.6 CEUs awarded

ADVANCED PHA FOR TEAM LEADERS

May 13 + 14 \$495

A number of companies having learned the value of PHA to their organizations have begun to broaden their use of PHA. Our new advanced-level course provides instruction on these new developments in PHA.

Topics covered include the detailed analysis of control systems, procedures and batch processes, the consideration of the new technical standard S-84 for safety systems; and the use of consequence modeling as part of PHA. These subjects are not normally treated in detail in PHA team leader training.

OBJECTIVE: To learn about advanced subjects in Process Hazard Analysis that should be considered by experienced PHA team members, especially Team Leaders, when conducting PHA's.

DIRECTED TO: Those who have received formal PHA training; PHA Team Leaders and participants, PSM coordinators.

PREREQUISITE: Our PHA Principles and/or PHA for Team Leaders training course (or equivalent). A background in engineering would be helpful.

COURSE CONTENTS:

- Overview of need for detailed PHA studies
- PHA on Controls Systems
- PHA for S-84
- PHA on Plant Procedures
- PHA on Batch Processes
- How to use Consequence Modeling in PHA studies

? **DURATION:** ~~Two days~~, 1.5 CEUs awarded

ONE DAY

ASSESSING RISKS TO PROCESS PLANTS FROM EXTERNAL THREATS (TERRORISM, SABOTAGE, VANDALISM AND THEFT)

Over the past 10 years, OSHA's Process Safety Management (PSM) Standard and EPA's Risk Management Program (RMP) Rule have resulted in improvements in managing releases of highly hazardous chemicals. In complying with these standards, companies have focused mostly on *accidental* releases. However, these regulations do not specifically exclude releases from *deliberate* acts. These acts can include external threats of terrorism, sabotage, vandalism and theft. Indeed, in a Fact Sheet on Site Security, referencing the PSM standard, EPA states "External threats must be considered when conducting a process hazard analysis." Unless properly managed, it is entirely possible that risk from deliberate acts could dominate that from accidental releases. This course deals with managing the risk from deliberate acts.

A government study in 1999 found that security at chemical plants needed significant improvement. Most security gaps were the result of complacency and lack of awareness of the threat. Moreover, few state and local chemical emergency response plans currently address chemical terrorism.

This new training course identifies and helps attendees understand the various external threats to process facilities and provides guidance in assessing the threat level to a specific facility using threat analysis. Instruction is provided in assessing the vulnerability of a process using vulnerability analysis and guidance is given on protecting against external threats.

Threat analysis helps you determine what could happen. It involves the identification of the source and type of threats and the assessment of the likelihood of threats. These likelihoods are used to assign threat levels that can be used to determine the extent of vulnerability analysis that needs to be performed and the levels of safeguards and security that are needed.

Vulnerability analysis involves the assessment of the degree to which a facility is exposed to injury, damage or other hostile action. It includes identifying ways in which attacks could happen. It assesses the process design, security, safeguards, and computer systems.

Security measures and safeguards deal with what can be done to protect against external threats. It covers prevention, inherent safety, process design, site security, controls, engineered safeguards, mitigation, emergency response and buffer zones.

The course also addresses inspection and auditing to assess the current state of protection against external threats, and protection and security on a continuing basis.

OBJECTIVE: To identify and develop an understanding of external threats (including types of terrorism, sabotage, vandalism and theft) to process facilities and provide guidance in performing a threat and vulnerability analysis, as well as inspections and auditing of plant's current vulnerability level.

DIRECTED TO: This course is intended for process safety and security personnel, and others who may be responsible for assessing and managing the risk of external threats to process facilities. Plant or company managers looking to gain more understanding of external threats and methods used to assess vulnerabilities of their facilities would also benefit from taking this course.

PREREQUISITE: *This course is open only to those individuals who are employees of process companies operating in the United States or who work for US Government agencies. A general background in process safety, risk management and/or security at manufacturing facilities is beneficial.*

COURSE CONTENTS:

- Overview
- Consideration of External Threats in Process Hazard Analysis
- Threat Analysis
- Vulnerability Analysis
- Security Measures and Safeguards
- Inherent Safety
- Site Security
- Security of Computer Systems
- Control of Information
- Emergency Response
- Training
- Inspections and Auditing

DURATION: One day, 0.7 CEUs awarded

RE-CERTIFICATION FOR PHA TEAM LEADERS

PHA is a dynamic subject with new technical developments and regulatory interpretations occurring frequently. This new course from Us will bring experienced PHA Team Leaders up to date with the latest technical and regulatory issues regarding Process Hazard Analysis. A discussion will also be provided of key issues that typically arise during PHA studies and guidance will be given on how to deal with such issues. There will be an opportunity to discuss any problems participants have encountered in PHA's they have led.

This course will help those who have led PHA studies sharpen their skills to be better Team Leaders.

OBJECTIVE: To learn about the latest technical and regulatory developments in PHA. To review key issues in performing PHA's and how to handle them.

DIRECTED TO: Those who have already received formal PHA Team Leader training in the past or who have previously led PHA studies and need to brush up on their skills and knowledge of PHA.

PREREQUISITE: Attendance at Our PHA for Team Leaders training course (or equivalent) or experience in leading PHA's.

COURSE CONTENTS:

- Regulatory developments in PHA
- Technical developments in PHA
- Key PHA issues and their treatment (shared examples from class participants will be discussed)
- How to handle obstacles in the PHA study (shared examples from all class participants will be discussed)
- Ensuring quality PHA study results / reports

DURATION: One day, 0.7 CEUs awarded