

## Process Safety Management and Classification Testing and Process Hazards Analysis Training

### Process Safety Management (PSM) Principles for Explosive Operations (1 Day)

This course addresses the unique aspects of the propellant, explosives, and pyrotechnic (PEP) materials as they relate to OSHA 29 CFR 1910.119 "Process Safety Management." The course begins with a review of the heritage of the PEP industry and the fundamental principles of explosive safety. These principles are emphasized throughout the presentation and discussion of the elements of the PSM regulation. This course will provide managers, engineers, safety professionals, and others involved PSM compliance efforts with an understanding of the practices and procedures that should be implemented to provide safe operations and compliance with 29 CFR 1910.119. Emphasis will be given to the benefits of implementing explosives safety protocol in conjunction with a PSM system (e.g., improved safety, enhanced product quality, cost avoidance, etc.)

#### Course Content

- Explosives Manufacturing Heritage
- PSM Background
- Brief overview of inter-relationships of OSHA PSM, EPA RMP, ISO 9000, & ISO 14000
- PSM elements (with explosives safety perspective)
- Employee Participation
- Process Safety Information
- Process Hazard Analysis
- Management of Change & "Replacement in Kind"
- Mechanical Integrity
- Operating procedures
- Training
- Contractors
- Hot Work Permit
- Incident Investigation
- Emergency Planning and Response
- PSM Audits
- Pre-startup Safety Reviews
- Documentation Requirements for PSM
- OSHA PSM Interpretations

## DOT, ATF, and In-Process Classification Testing (1 Day)

This course presents the testing protocol associated with classifying propellant, explosives, and pyrotechnics (PEP) for transportation, storage, and facility siting. The course discusses similarities and differences in testing philosophy between these three classification types and provides a basis for understanding of which tests appropriately address the related classification issues. Standard test methods and appropriate interpretation of test results will be reviewed. The approach for development and performance of in-process simulation testing required for facility siting will also be outlined and discussed. The course will then focus on how to apply the various test results to obtaining DOT approval for transportation, ATF approval for storage, or local jurisdiction approval of facility siting. Considerable time will be spent discussing how proper classification of materials and articles can be used to facilitate the right decisions regarding personnel protection, facility/equipment design, and facility siting. This course will prove invaluable for personnel (e.g., management, program managers, project engineers, facility engineers, safety engineers, safety professionals, others) involved in obtaining material/article classifications. At the conclusion of this course the participants will have an understanding of the applicable regulations, the philosophy of classification testing, how to properly apply classification test results to protect personnel and company assets, and the protocol required to obtain approval from the various agencies/jurisdictions.

### Course Content

- The philosophy of classification testing
- Overview of applicable DOT, ATF, and Building/Fire Codes
- Classification test methods and procedures
- Sensitivity testing
- Reactivity testing
- Selection of appropriate tests
- Standard
- In-process simulation
- The role of process hazards analysis in specifying in-process test parameters
- Steps to obtain DOT and ATF classification of material/articles
- Facility Siting and Permit approval
- Quantity Distance
- Attended vs. unattended operations
- Inhabited buildings
- Magazines requirements
- Engineer controls
- Barricades
- Work Station Shielding
- Code compliance
- Permit application process

## Process Hazards Analysis (PHA) Training for Team Leaders (2 Days)

This two-day course consists of a combination of lecture and practical workshop exercises to allow participants to become familiar with the PSM requirements related to PHAs, selection of the appropriate PHA methodology(s), and how to effectively lead a PHA team. The unique aspects of propellant, explosives, and pyrotechnic (PEP) manufacturing/processing will be emphasized as PHA methodologies are discussed throughout the course. Participants will learn to organize and lead hazard analysis studies using the various PHA techniques. The course will address the tactics and success factors that help ensure a successful study. Participants will work in groups to apply PHA methodologies to example energetic material processes. Instructors will work closely with the participants throughout this session/workshop to ensure that key principles are understood. By applying the PHA methodologies to practical example processes, the participants will internalize the principles learned and gain added insight to the value of performing proper PHAs at their facilities.

### Course Content

- Regulatory PHA Requirements
- Preparing and Organizing PHA Studies
- Subdividing the Process for Study
- Determining appropriate PHA methodology
- Leadership Skills for Managing the Team
- Applying Qualitative & Quantitative PHA Methodologies
- Design Intent, Parameters and Deviations
- Human Factors
- Material Characterization Test Data
- How to document a PHA study
- PHA Report Preparation & Approval process
- Managing the Follow-up of PHA Results