DEKRA

2012 Training Course Brochure and Schedules

Practical, technical training tailored to your needs by The Global Experts in Explosion & Process Safety

Chilworth

a DEKRA company

PREFACE

CHILWORTH PROCESS SAFETY ACADEMY

Since our founding, Chilworth Global has always considered part of its mission to share its process safety expertise, knowledge of best practices, and industry experience through quality training. Currently the ***Chilworth Process Safety Academy***, provides one of the most comprehensive series of process safety courses in the world. As an IACET Authorized Provider, Chilworth Technology, Inc. offers CEUs for its programs that qualify under IACET guidelines.

Chilworth Process Safety Academy courses cover key aspects of process safety, including: Combustible Dust, Electrostatics, Process Safety Management (PSM), Process Hazard Analysis (PHA), Safety Instrumented Systems (SIS) and Safety Integrity Level (SIL), PSM, ATEX/DSEAR Compliance, Consequence Modeling, Chemical Reactivity, Emergency Relief Systems and much more.

From multiple global offices located in North and South America, Europe and Asia, ***Chilworth Process Safety Academy*** courses are delivered through a variety of methods and formats including:

- Multiple languages (e.g., English, German, Spanish, French, Italian, Chinese, Japanese, Portuguese, Hindi)
- Private, in-company training (at the client's chosen location)
- Public, open-enrollment (scheduled courses in various locations globally)
- Multimedia (instructor-led webinars, e-learning and computer-based delivery)

The ultimate objective of a technical training course is to provide understanding through the effective transfer of knowledge. Chilworth Global has designed its courses to achieve this objective through the use of multiple-media and delivery methods, including:

- Instructor-led content presentation (using PowerPoint slides)
- Open question-and-discussion forum
- Instructor-led demonstrations
- Trainee participation through case studies and role-playing exercises
- Quizzes
- Course Evaluation Feedback forms
- Certificates of completion

This design helps ensure a diverse, engaging and effective learning experience through the use of auditory, visual and tactile based instruction.

To verify comprehension/understanding of the subject material and to apply for eligible CEU's, Chilworth Global administers, a short course quiz with review at the end of each course and a certificate will be awarded to participants for each completed course.

We are also developing a diploma-based training curriculum for Process Safety Specialists comprised of three modules:

1. Core process safety competencies (explosions, chemical reactions, thermal instability, static electricity, etc.)
2. Process Hazard Analysis (including HAZOP, What-if and other PHA methodologies) and PHA leadership
3. Advanced process safety (vent sizing, safety instrumented systems, etc.)

IN-COMPANY TRAINING

Chilworth Process Safety Academy courses can be delivered as private, in-company training at the location of your choice.

In-company training provides companies the option of customizing courses to meet specific company training needs. For example, courses can be tailored to different technical levels reflecting the audience mix (e.g., Managers, Engineers or Operators.) Clients can also provide company-specific or site-specific training content, such as specific company practices or process examples, to be added to the course to complement Chilworth course content and used for practical exercises. In-company course delivery is also a cost-effective method of training multiple employees and can be scheduled to accommodate participants' availability.

Recent examples of in-company delivery include:

- Global PSM training courses delivered in the U.S., Europe and Asia for a major multinational chemical company
- ATEX training delivered across multiple sites to plant operators of a global pharmaceutical company
- International training sessions on Security Management Process (SMP) in the U.S., Europe and Asia for a multinational chemical company
- Multi-site Flammability and Chemical Reaction Hazard training for a major pharmaceutical laboratory
- Multi-site training on Combustible Dust Hazards
- Training and application of (Non-electrical) Mechanical Ignition Risk Assessment (MEIRA) to sites in Europe, Asia and the U.S.
- PHA Team Member and PHA Team Leader training delivered at a major industrial manufacturer's technical center.

Whether you are an individual needing to develop your expertise on a specific process safety topic or a company that requires a comprehensive program of process safety training for management, engineers, operators, maintenance or other plant staff, the ***Chilworth Process Safety Academy*** will deliver a customized training solution to meet your needs.

Chilworth Technology, Inc. has been approved as an Authorized Provider by the International Association for Continuing Education and Training (IACET), 1760 Old Meadow Road, Suite 500, McLean, VA 22102; (703) 506-3275.

ABOUT CHILWORTH GLOBAL (A DEKRA COMPANY)

Serving the processing industries since 1986, Chilworth Global is a worldwide leader in process safety services providing a full array of Process Safety Engineering (PSE) and Process Safety Management (PSM) services including: consulting, training, laboratory testing and specialized process safety testing instrumentation and equipment.

Unmatched technical expertise enables Chilworth Global to provide best-in-class solutions – delivered by a large number of highly experienced multi-disciplinary engineers and Process Safety Specialists. Chilworth Global delivers consistent quality worldwide and meets the needs of multinational companies that require integrated, consistent services tailored to local cultures and operational and regulatory requirements.

PSM services include:

- PSM program development and program enhancement
- PSM needs assessments and gap analysis
- PSM applicability assessments
- PSM and RMP audits
- Process Hazard Analysis leadership (using HAZOP, What-if, FMEA, Fault-tree Analysis and related PHA techniques)
- Incident investigation
- Facility Siting Analysis
- Consequence Modeling
- PSM training

PSE services include:

- Laboratory and full-scale testing of:
  - powders/dusts
  - liquids and gases for their flammability/combustibility
  - reactivity
  - thermal stability
  - electrostatic properties
- On-site and desktop fire and explosion hazard assessments
- Process design/safety engineering support
- Expert witness testimony and litigation support
- PSE training

ABOUT DEKRA

DEKRA SE is one of the world's leading expert organizations. The company currently runs activities in more than 50 countries. Around 25,000 employees are committed to ensuring long-term safety, quality and environmental protection.

The DEKRA Business Units "Automotive", "Industrial" and "Personnel" provide professional and innovative services in the fields of vehicle inspections, expert appraisals, international claims management, consulting, industrial testing, product testing, certification, environmental protection, qualification, temporary work and out- and new placement.

The Global Experts in Explosion & Process Safety

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CONTENTS

COURSE SYNOPSES

Course	Duration	Description
Process Safety Management (PSM) Essential	1-Day	Provides the participant with a broad-based overview of the key components of Process Safety Management programs
Effective Implementation of Process Safety Management (PSM) Programs	2-Days	Expands on the PSM Essentials course by providing the knowledge necessary to design and implement a customized PSM program that is applicable to a company's process manufacturing operations
PHA Team Member	1-Day	Learn the skills required to maximize effectiveness as a team member in a Process Hazard Analysis (PHA)
PHA Team Leader	3-Days	Expands on the PHA Team Member Course by covering additional skills necessary to lead, or facilitate, a Process Hazards Analysis (PHA)
Preparations for an OSHA Dust Explosion Hazard Inspection	1-Day	Prepares you for a targeted OSHA dust explosion hazard inspection at your facility
Scale-Up of Chemical Processes and Risk of Thermal Runaway	2-Days	Understand fundamentals of scale-up and reaction runaway. Identify chemical reaction hazards using small scale screening tests and large scale adiabatic tests
Understanding & Controlling Electrostatic Hazards	1-Day	Understand electrostatic charge generation, accumulation and how to assess and control the hazards associated with potential discharges
Dust Explosions Prevention & Protection Techniques	1-Day	Learn how to assess and control the hazards of combustible dust in industry with code compliance aspects of NFPA standards
Explosion Hazards of Gases & Vapors in the Process Industries	1-Day	Fundamentals, flammability tests, prevention and protection measures
Evaluation & Selection of Electrical & Non-Electrical Equipment for use in Hazardous Areas	1-Day	Learn how to select and design electrical and mechanical systems and equipment based on the flammable ratings of hazards within your facility
Chemical Reaction Hazards	1-Day	Learn to identify and recognize the thermal and chemical reactivity hazards associated with a chemical process based on principles of scale-up and development
Webinar – PSM Alert – OSHA Chemical Facility National Emphasis Program NEP for Process Safety Management (PSM) is Now Issued Nationwide	1-Hour	Learn key aspects of the Chemical Facility NEP, who it applies to, OSHA's implementation plan, what to expect during an NEP inspection and how to assess current compliance and steps necessary to develop a NEP compliance plan.

INSTRUCTORS

Vahid Ebadat, Ph.D., M.Inst.P, MIEE, C.Eng., C.Phys. is the CEO of Chilworth North America. He has worked extensively as a process and operational hazards consultant for the chemical, pharmaceutical and food industries. Dr. Ebadat is a regular speaker at training courses on gas and vapor flammability, dust explosions, and controlling electrostatic hazards. He is a member of NFPA 77 Technical Committee on Static Electricity, NFPA 654 Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particular Solids and ASTM E27 Committee on Hazard Potential of Chemicals. Dr. Ebadat has published numerous technical papers and articles based on his research.

David E. Kaelin, Sr., B.S.Ch.E., David Kaelin has over 25 years' experience in the specialty chemical manufacturing industry and 15 years specializing as a Process Safety Engineer at Chilworth Global. He has participated in the design and construction of numerous chemical processing facilities and provided support and training in all areas of PSM. As a Process Safety Engineer he has led process hazard analysis, risk assessments and facility siting reviews. At the corporate level he has created and taught courses in PSM and hazard recognition methods. He is an active member of AIChE and NFPA.

Anand Kenchenpur, B.S., M.S., Ch.E., is the Flammability Group Manager at Chilworth Global. He has extensive experience in design, simulation and testing of highly customized tests for companies in areas such as gas/vapor flammability, dust explosion hazard testing, thermal instability testing and electrostatic hazard testing. As a chemical engineer, he is also experienced in characterizing the combustion, fire, and explosion properties of gases, liquids and solids. Other areas of experience include thermodynamics, heat transfer, reaction kinetics, data acquisition systems, and characterization of advanced materials using SEM, TEM, X-ray diffraction and Surface area analyzer. Anand received his Master's degree from South Dakota School of Mines and Technology, SD.

Muhammad Qureshi, Ph.D., is a Process Safety Specialist at Chilworth Global. He provides consulting services in dust explosion and electrostatic hazard assessment and is also responsible for standard and customized electrostatic testing. His background research includes phase interactions in multiphase flow, fluid mechanics, thermodynamics and computer aided engineering. He received the Excellence Award from NASA for his services in NASA's SHARP Student program in 2003, and is also the recipient of Best Presenter Award of the graduate student at New Jersey Institute of Technology. He is an "invited reviewer" for the Mechanics Research Communications on a regular basis. He is also a member of the American Society of Mechanical Engineering. He received his Ph.D. degree in mechanical engineering from the New Jersey Institute of Technology (NJIT) in 2006.

Swati Umbrajkar, Ph.D. is the Manager of the Chemical Process Evaluation Group at Chilworth Global. Her research includes the synthesis of metal/metal oxide nanocomposites, analysis of highly energetic materials using X-ray diffraction, scanning electron microscopy (SEM), differential scanning calorimetry (DSC), and a number of post analysis techniques to characterize the thermodynamic and kinetic parameters of a test system. Dr. Umbrajkar consults with companies on a variety of process safety issues including high-pressure DSC cell tests, adiabatic calorimetry (ARC and ADC), reaction calorimetry (RC-1), all of which allow for the safe scale-up of batch and semi-batch processes. She has expertise in determining self-acceleration decomposition temperature (SADT) and time to maximum rate (TMR), which are critical issues associated with the storage of bulk materials. Dr. Umbrajkar has a Doctorate from the New Jersey Institute of Technology.

Steven J. Luzik is a Senior Process Safety Specialist at Chilworth Global with over 30 years' experience in the area of fire and explosion hazards including gas/vapor explosions, dust explosions and fire and explosion protection strategies. He is a registered Professional Engineer in the State of Pennsylvania and a Certified Fire and Explosion Investigator (CFEI) with the National Association of Fire Investigators (NAFI). As a former Mine Safety and Health Administration [MSHA] manager and technical specialist, he has investigated a multitude of incidents involving flammable vapors, gases and dusts that have included surface and underground mining facilities and industrial facilities where fires and explosions have occurred. He has conducted dust explosion hazard assessment at several coal-fired power plants.

He also has served as a moderator of a flammability and dust explosibility laboratory, processing requests from MSHA and other Federal agencies for testing to determine the flammability and explosibility properties of solids, liquids, dusts and vapors. In this capacity, he has been called upon to provide expert testimony on the explosibility hazards associated with the manufacturing, processing and handling of these materials. He is a member of the American Society for testing and Materials (ASTM) E-27 Committee on Hazardous Properties of Chemicals, the National Association of Fire Investigators (NAFI) and the National fire Protection Association (NFPA). He has authored numerous publications in the areas of fire and explosion prevention, protection and investigation. He has a BS degree in Chemical Engineering from the University of Notre Dame.

Richard W. Prugh, M.S.Ch.E., CSP, PE (Engineering and Fire Protection), Mr. Prugh is a Senior Process Safety Specialist at Chilworth and provides process safety engineering expertise to clients at large and small plants, to improve the safety of chemical manufacturing operations. During his career with the Du Pont Company, he was involved in instrument engineering, explosion-hazards testing, explosives manufacturing and testing, pilot-plant supervision, organic-chemicals research, safety and fire protection audits, and process-safety consulting. Since 1985, he has provided process safety services to chemical and petrochemical plants in thirty-two States and in twelve foreign countries. He is the author of "Guidelines for Vapor Release Mitigation" and 25 presentations to Loss Prevention Symposia, and he prepared the "Toxicity" section for the 2008 issue of "Perry's Chemical Engineers' Handbook" and the "Safety" sections for three encyclopedias. His recent experience involved overseeing the safety analyses of nerve-gas destruction plants and auditing the safety status of a dozen off-shore installations, including evaluation of management and employee safety culture.

Craig S. Rudenstein, P.E., M.S. Eng Mgt., B.S.Ch.E., Sr. Process Safety Specialist for Chilworth Technology, Inc. Mr. Rudenstein is a licensed Professional Chemical Engineer with over 35 years' experience and education in Process Safety, Employee Safety, Environmental Compliance, Process Engineering, Project Management, Energy, and Quality Management Systems. For 25 years he has developed expertise in facilitating and managing PHA studies using methodologies of HAZOP, What-If, Checklist, FMEA and LOPA for specialty chemicals, pharmaceuticals, foods, and petrochemicals industries. He is experienced in new PHA's, design- stage or preliminary hazard reviews, and PHA revalidations as well as consequence screening modeling. He possesses a full understanding of regulatory requirements and how to incorporate site- specific work practices, policies and procedures into PSM and RMP compliance programs. He has led numerous regulatory compliance audits and process safety management assessments and is an experienced trainer for process safety management topics. He has led Incident Investigations involving witness interviews and application of factual tree analysis, reviewed by enterprise management and legal counsel. He is a Senior Member of AIChE.

Pieter Zeeuwen, M. Sc., is a Senior Process Safety Specialist at Chilworth Global. He has more than 30 years' experience in the gas and dust explosion fields, including materials testing, small and large scale explosion research, and consultancy for industry and government agencies in number of countries. His areas of expertise include gas and dust explosion hazard assessment, gas and dust explosion prevention and protection, electrostatic hazard assessment, hazardous area classification, and gas cloud explosions as well as incident investigations.

Over the years, he has served on many working groups including various Standards committees, both nationally and internationally, e.g. most recently CEN (European Standards Committee) working groups on explosion protection methods and on test methods. He regularly lectures on various aspects of explosion safety and acts as seminar chairman and course director. He has published numerous articles in scientific journals and presented many papers at international conferences.

Brian J. Kingsley, B.S. Ch.E. is the Manager of Consulting and Training Services at Chilworth Global's US headquarters located in Princeton NJ. He has over 25 years of experience in the chemical manufacturing industry divided between consulting engineering and production/manufacturing. His consulting years began as a process engineer designing new and relocated polymer facilities under license from ICI & DuPont, renowned leaders in Process and Industrial Safety. After 13 years of consulting, Brian, as Director of Technology Transfer, moved into the manufacturing arena of specialty chemicals. He spent the next 12 years as Engineering/Maintenance Manager for Akzo Nobel (coatings) and then Project/Process Safety Manager for Firmenich (Flavor/Fragrance). Brian has managed the design, construction and start-up of numerous chemical-processing facilities. As a Process Safety Manager, he has led process hazard analyses, incident investigation teams, hazard assessments, etc. He has provided seminars in a variety of areas including Explosible Dust Hazard Awareness and PSM. Brian is responsible for the Chilworth's Consulting Safety Specialists throughout North America.

Vladimir Stetsovsky, M.S., is a Senior Process Safety Specialist with over 19 years' experience in the manufacturing industry and utilities, and seven years specializing as an Electrostatic Safety Engineer. His career involved converting and specialty chemical manufacturing with numerous hazardous chemicals in both batch and continuous operations. He has participated in the design and construction of several large chemical and converting processing facilities and provided support and training in all areas of Process Electrostatic Safety Management. As an Electrical Engineer he has led process hazard analysis, risk assessments and facility siting reviews. At the corporate level he has created installation specifications and taught courses in ESD and hazard recognition methods and provided technical safety support to manufacturing sites producing adhesives and pressure sensitive products.

Mr. Stetsovsky has led or provided technical assistance to many fire and explosion incident investigations including incidents involving thermal heat transfer fluids, spontaneous combustion, dust explosions and thermal oxidizer and incinerator operations.

Robert L. Gaither, CSP, Ph.D., is a Senior Process Safety Specialist for Chilworth Global. Dr. Gaither has more than 28 years' experience in company operations, regulatory compliance, management consulting, and process safety/risk management experience. He has led organizations at site, division and corporate levels to achieve record safety performance, significant cost savings, and external / internal recognition for accomplishments.

Dr. Gaither has proven leadership and interpersonal skills that enable customers to discover synergies for business excellence. His keys to successes are working effectively with all organizational levels, strong communication skills, assessing customer/business partner needs and finding solutions, mentoring staff, promoting teamwork, and leveraging systems and resources already in place.

Dr. Gaither is a trained expert in HAZOP and SIL/LOPA Facilitation; and Chevron RISKMAN2 / IHAZID *Process*. He is also a trained and experienced PHAST User.

Andrew Kusmierz, is a Senior Process Safety Specialist with more than 20 years' experience working with hazards involving dust, liquids and vapors. A graduate of Warsaw University of Technology, he worked at the university for 11 years in the Combustion Lab of the Aerospace Engineering Department where he was involved in studies of various combustion processes including: single droplet and spray combustion, shock tube studies for gaseous and hybrid mixtures, gasification of coal particles by detonation wave, large scale dust explosions, explosibility limits, explosion venting studies, as well as computer modeling and simulation.

His experience includes designing and conducting non-standard tests (i.e., solvent vapor migration, gas evolution, electrostatic charging of liquids in pipe flow or sprays, flammability and fractionation testing specific to refrigerant blends containing flammable components, testing for investigative projects, etc.).

He has investigated numerous flash fire and explosion incidents; performed safety reviews and audits; and provided consulting on industrial systems or processes that involve solids, vapors and gases. He has conducted hazards assessment on numerous processes; has conducted code compliance studies, and has made numerous safety improvement recommendations.

Marc Rothschild, P.E., has extensive qualitative and quantitative process safety management and risk experience at the plant and corporate levels. He also has been and currently is a process safety consultant to various industries. He is a subject matter expert in quantitative risk analysis (QRA), helping companies find cost-effective solutions to manage their risk through quantitative analysis. He has many years of experience working with the SAFETI QRA program and has developed customized risk analysis programs and has authored numerous technical papers on QRA. Mr. Rothschild is also a highly experienced PHA leader, having led PHA studies in a wide range of industries, using Hazard and Operability (HAZOP), What-if, Checklist and Fault Tree Analysis (FTA) PHA methodologies. He is proficient in *PHAPro* and *PHAWorks* to facilitate and document PHAs. Mr. Rothschild has led numerous Incident Investigations of actual process material releases and "near-misses." As a corporate and facility Process Safety Engineer, Mr. Rothschild developed and implemented numerous process safety programs to maintain a safe work place and to ensure compliance with PSM standards.

BEYOND COMPLIANCE: DEVELOPMENT AND IMPLEMENTATION OF PSM IN THE WORKPLACE (2-Day)

CEUs: 1.2

Course Design and Objectives

This course teaches attendees how to systematically develop and implement an effective and successful process safety management (PSM) program that not only meets regulatory compliance, but becomes part of a company's safety culture and everyday operations.

This course examines the specific OSHA requirements of each of the 14 PSM elements. Case histories of accidents and OSHA compliance citations will be reviewed to identify weaknesses in existing PSM programs, and specific guidance will be given on building a compliant PSM program.

The course goes beyond PSM compliance, however, and examines the role and importance of developing and maintaining an effective process safety culture in the workplace, the role of process safety metrics in maintaining an effective PSM program, and it introduces the concept of inherent safety.

The course includes several videos that illustrate the consequences of failure of PSM. Additionally, interactive exercises are included to promote class discussion. Each attendee will receive a notebook containing the presentation materials, including the presentation, and handouts of example forms and other information that can be immediately used by the attendees to develop their own PSM programs.

What You Will Learn:

- Regulatory approach to process safety
- PSM requirements - Importance of the 14 PSM elements
- Weaknesses in existing PSM programs
- Elements of successful PSM programs
- Importance of a sound process safety culture in establishing an effective management of process safety

Who Should Attend

Anyone responsible for PSM program compliance and effective PSM implementation (e.g., Process Safety Managers, Engineers, EH&S Managers, Operations and Maintenance Personnel and/or other designated PSM representatives)

Course Outline

Process Safety Management Overview

- Accidents are Preventable: The Need for Process Safety
- OSHA PSM Approach to Managing Safety
- Additional Process Safety Regulations (state-level, EPA, others)

OSHA 14 PSM Elements (requirements, compliance and implementation is addressed for each element)

- Employee Participation
- Process Safety Information
- Process Hazards Analysis
- Operating procedures
- Hot work permits
- Mechanical integrity
- Contractors
- Training
- Management of Change
- Pre-startup safety review
- Incident Investigations
- Compliance Audits
- Trade Secrets

Beyond Compliance: Creating a Process Safety Culture in your Workplace

- Establishing a culture of process safety
- Development of effective process safety metrics
- Introduction to inherent safety principles

Quiz
Course Evaluation Feedback Form

Public Course Offering

Price: $995.00

Dates & Locations:

BEYOND COMPLIANCE: DEVELOPMENT AND IMPLEMENTATION OF PSM IN THE WORKPLACE (2-Day)	
11/6/2012 – 11/7/2012	**11/27/2012 – 11/28/2012**
Hilton Garden Inn Indianapolis Downtown 10 East Market Street Indianapolis, IN 46204 317-955-9700 Register & Pay Here for this date & location: **Click Here**	Chilworth Global 113 Campus Drive Princeton, NJ 08540* Register & Pay Here for this date & location: **Click Here**

***Call for a list of NJ hotels**

PHA TEAM MEMBER (1-Day)

CEUs: 0.6

Course Design and Objectives
This course teaches the skills required to maximize effectiveness as a team member in a Process Hazard Analysis (PHA). The course provides an overview of what PHAs are, why they are necessary, and how PHAs are conducted.

Regulatory requirements and industry guidelines provide the foundation for current use of team-based PHAs as a key Basis of Safety against potential accidents for a multitude of processes.

This course introduces the concept of a Hazard Scenario with associated Causes, Consequences, and Safeguards as analyzed and understood during a typical PHA. PHAs commonly involve use of Risk Ranking and generation of proposed recommendations. The course also compares recognized PHA techniques including Checklist, What-If, Hazard and Operability Study (HAZOP), Failure Modes and Effects Analysis (FMEA), Fault Tree Analysis (FTA), and Hazard Identification (HAZID) for Preliminary PHAs.

Advanced PHA topics include team facilitation, Layer of Protection Analysis, PHA Revalidation, PHA documentation, and Action Item follow-up.

Who Should Attend
Individuals from operations, engineering, safety, R&D, maintenance, management (and any other disciplines) participating as members of a Process Hazard Analysis (PHA) team.

Prerequisite
An understanding of process systems and hazards.

You Will Learn
- Why Process Hazard Analysis is necessary
- Regulatory requirements for PHAs
- Industry guidelines applicable to PHAs
- How to conduct a PHA using common PHA techniques
- How to risk-rank PHA hazard scenarios
- The different roles of participating PHA team members
- Basic skills in understanding process safety information (PHD's, MSDS, PFD's, etc.)

Course Outline
- Process safety management concepts
- Definition and description of a PHA
- Why a PHA is necessary
- Overview of PHA techniques
  - Checklist
  - What- If and What-if Checklist
  - Hazard and Operability Study (HAZOP)
- How PHAs fit into a company's process/operational safety efforts
- When PHAs are conducted & types of methods used (MOC, new process/equip design, regulatory requirement)
- Expectations and key skills of a PHA team member

Quiz
Course Evaluation Feedback Form

This course is only offered as in-company training at client's site at this time. Please contact us for details on providing this training at your site.

PHA TEAM LEADER (3-Day)

CEUs: 1.8

Course Design and Objectives
This course provides the concepts of PHA team leadership, including how to conduct an effective PHA, role of a PHA leader, techniques for efficient and effective facilitation, creating nodes, PHA methodologies (e.g., HAZOP), optimization of PHA team performance, revalidation of PHAs and an overview of PHA software.

The course is illustrated with real industrial examples (both batch and continuous processes). Course participants will work case studies and participate in HAZOP team leader role playing exercises, in the real situation of leading a HAZOP team. The training course is delivered by one of Chilworth Global's highly experienced PHA practitioners.

Who Should Attend
Personnel from engineering, EH&S, Process Safety or anyone else tasked with leading and documenting Process Hazard Analyses (PHAs).

Prerequisites
- Chilworth Global's **Process Hazard Analysis - Team Member** course, or equivalent training and knowledge.
- Understanding of process drawings such as Piping & Instrumentation Drawings (P&IDs) and Process Flow Diagrams (PFDs).

You Will Learn
- How to effectively prepare, lead and document PHAs and risk-rank hazard scenarios using a simplified LOPA technique
- How to maximize the identification of Hazard Scenarios, including ones with low likelihoods

Course Outline
- **Preparing for a PHA**
  - Purpose, Objectives, Scope Determination
  - Process Safety Information Collection
  - Process Noding
  - Risk Ranking Methodology Determination
  - PHA Team Member Selection
- **Facilitating PHA Sessions**
  - First Day Topics
  - Maximizing Hazard Scenarios Identification
  - Dealing with Group Dynamics
  - Dealing with Missing Data
- **Overview of Regulatory Requirements**
  - 29CFR1910.119 OSHA Process Safety Management
  - 40CFR68, EPA Risk Management Program
- **Additional PHA Topics**
  - Facility Siting Review
  - Human Factors Review
  - Previous/Similar Incident Review
- **Documenting PHA**
  - Recording Process Safety Information
  - Use of PHA software and spreadsheets
  - Writing Recommendations
  - Narrative Report Format
- **Workshops**
  - Practice PHA exercises
  - Practice using PHA Software

Quiz
Course Evaluation Feedback Form

This course is only offered as in-company training at client's site at this time. Please contact us for details on providing this training at your site.

PREPARATIONS FOR AN OSHA DUST EXPLOSION HAZARD INSPECTION (1-Day)

CEUs: 0.6

Course Design and Objectives

This training course is specifically designed to prepare you for a targeted OSHA dust explosion hazard inspection at your facility. The course focuses on four areas: (1) combustible dust accumulations within your facility, (2) specific plant operations that may be targeted by OSHA, (3) classification of electrical equipment, and (4) the Hazardous Chemical Communication Standard requirements.

You Will Learn

- How to be fully prepared for a targeted OSHA dust explosion hazard inspection at your plant/facility
- How to identify the areas that OSHA will focus on in carrying out this type of inspection
- How to prepare for the inspection and address any issues that may arise
- How to mitigate hazards that may exist prior to the arrival of the inspector

Who Should Attend

Managers responsible for safe plant operations including protection of safety, health and the environment in the chemical and processing industries including bulk and finished pharmaceuticals, bulk and fine chemicals, detergents & soaps, petrochemicals, food and drink, plastics and rubbers, metals, textile, paper and lumber, agrochemicals and dyes and paints

Technical personnel including engineers, project managers and others involved in the direct application of Process Safety programs to operations, maintenance, and/or technical aspects of facilities

Course Outline

- **The Dust Explosion Hazard Primer**
  - Background
    - The Fire Triangle
    - Conditions for a Dust Explosion
  - Flammability of Dusts
    - Sensitivity to Ignition
    - Explosion Severity
    - Factors Affecting Flammability
  - Establishing a Basis of Safety – An Overview
    - Elimination of Ignition Sources
    - Avoidance of Flammable Atmospheres
    - Provision Against the Consequences of Ignition
- **Introduction to the Preparatory OSHA Dust Inspection Training**
  - Background information concerning the recent emphasis for targeted Dust Explosion Hazard Inspections
    - Incident history of dust fires and explosions in the process industry
    - The Chemical Safety Board Report
    - The OSHA National Emphasis Program
- **Codes and Standards**
  - OSHA Regulations and the General Duty Clause
  - Consensus Standards – NFPA, FM, State and Local Building Codes
- **Elements of a Targeted Inspection**
  - Explosion Hazards
    - Housekeeping
    - Process Equipment
  - Energy Control
    - Lock Out /Tag Out
    - Electrical Classification
  - The Hazardous Communication Standard
    - Your Responsibilities as an Employer/Employee
    - The Hazardous Communication Plan
    - Information and Training Requirements for Employers

  - Actual OSHA Citations Written Under the General Duty Clause
    - Examples of Citations
    - Remedial Measures to Abate Them
- **How to Prepare for the Inspection**
  - Housekeeping Do's and Don'ts
  - Electrical Classification Schemes
  - Consensus Standards and their application to your facility
  - Dust Hazard Assessment Strategies

Quiz
Course Evaluation Feedback Form

Public Course Offering

Price: $595.00

Dates & Locations:

PREPARATIONS FOR AN OSHA DUST EXPLOSION HAZARD INSPECTION (1-Day)		
2/23/2012	**6/14/2012**	**10/24/2012**
Chilworth Global 113 Campus Drive Princeton, NJ 08540* Register & Pay Here for this date & location: **Click Here**	Chilworth Global 113 Campus Drive Princeton, NJ 08540* Register & Pay Here for this date & location: **Click Here**	Chilworth Global 113 Campus Drive Princeton, NJ 08540* Register & Pay Here for this date & location: **Click Here**

***Call for a list of hotels in the area.**

SCALE-UP OF CHEMICAL PROCESSES AND THE RISK OF THERMAL RUNAWAY (2-Day)

CEUs: 1.2

Course Design and Objectives

The risk analysis of reactive systems is an essential tool to ensure safety prior to process operations. Reaction study provides an insight into the complex interaction of a wide range of factors that influence the probability and consequences of undesired safety incidents involving chemical reaction, energies, equipment, personnel and productivity. This course will benefit attendees from a broad spectrum of backgrounds and job responsibilities including chemical engineers, process engineers/scientists, plant/process safety/risk managers, facilities managers and all others who need to be aware of the risks and hazards that can lead to accidents, injuries, property damage and business interruptions to the plant.

You Will Learn

- Use of Chemical Engineering Principles to study the potential runaway reactions for storage and reactor risk assessments
- Small-scale studies
- Performing risk analysis of chemical processes
- Development of inherently safer processes

In general this course is designed to identify and recognize the thermal and chemical reactivity hazards associated with a chemical process based on the principles of scale-up and development. The participants will be able to decipher the results of the preliminary screening tests by using the chemical engineering concepts relating to safe plant operation and will be well-versed with the latest techniques for the optimization of the processes.

Who should attend

- Chemical engineers, plant/process safety & risk managers, facilities managers
- Research chemists, process engineers and scientists working in chemical processing and manufacturing
- Technical personnel from engineering, operations, maintenance, and safety who are responsible for developing and implementing the safety processes.

Course Outline

- **Introduction**
- **Where hazards arise**
  - A review of reported incidents involving runaway reactions and current legislation
- **Chemical hazards assessment strategy**
  - Integration of a testing and assessment strategy into the development lifecycle of a chemical process
- **Fundamental principles of scale-up and reaction runaway**
  - Pressure Generation
  - Exothermicity
  - Thermal inertia and scale up
  - Kinetics, heat loss and reagent accumulation
  - Criticality Classes
- **Workshop 1**
- **Identification of highly energetic materials**
  - Strategy for assessing Explosivity:
    - Theoretical analysis
    - Experimental techniques and their analysis
- **Small scale screening tests for liquids, mixtures and powders**
  - Experimental protocols and analytical techniques including
  - Specific methods for drying
  - Packaging
  - Storage Stability Testing
- **Chilworth Global – Lab Tour**
- **Reaction characterization through calorimetry**
  - Characterization of a process when it is running under control

- **What happens when control is lost**
  - Characterization of Thermal Runaway Reaction through Adiabatic Calorimetry
  - Runaway kinetics and generation of thermal data for vent sizing
- **Workshop 2**
- **Putting it into practice – Data Interpretation**
  - A workshop designed to enable delegates to interpret the data derived from the experimental techniques discussed.
- **Safety Measure Selection**
  - Process control considerations
  - Discussion of various safety measures available to protect/prevent runaway reactions
- **Two Phase Flow and Emergency Relief Venting Methodology**
  - The most common basis of safety in the batch and semi-batch process industries, a comprehensive ground will be given as a foundation to further tuition.

Q&A/Group Discussion
Quiz
Course Evaluation Feedback Form

***You will need to bring a scientific calculator to this course.**

Public Course Offering

Price: $995.00

Dates & Locations:

SCALE-UP OF CHEMICAL PROCESSES AND THE RISK OF THERMAL RUNAWAY (2-Days)	
4/10/2012 - 4/11/2012	**11/13/2012 - 11/14/2012**
Chilworth Global 113 Campus Drive Princeton, NJ 08540* Register & Pay Here for this date & location: **Click Here**	Chilworth Global 113 Campus Drive Princeton, NJ 08540* Register & Pay Here for this date & location: **Click Here**

***Call for a list of hotels in the area.**

2012 FIRE, EXPLOSION AND THERMAL HAZARDS TRAINING: 5 DAY TRAINING

On the next several pages you will find descriptions and registration details for Chilworth Global's Fire, Explosion and Thermal Hazards training courses. The series contains the following 1-day courses:

- Understanding & Controlling Electrostatic Hazards
- Dust Explosion Prevention & Protection Techniques
- Gas/Vapor Explosion Hazards
- Evaluation & Selection of Electrical & Non-Electrical Equipment for Use in Hazardous Areas
- Chemical Reaction Hazards

Who Should Attend

Managers and technical staff from the chemical & processing industries, including bulk & finished pharmaceuticals, bulk & fine chemicals, detergents & soaps, petrochemicals, food & drink, plastic & rubbers, metals, textiles, paper & lumber, agrochemicals, and dyes & paints.

REGISTRATION

Register for as many of the five (5) courses as needed; or take advantage of our 20% discount for registering for all five days.

REGISTER FOR ALL FIVE (5) COURSES LISTED ABOVE AND RECEIVE A 20% DISCOUNT!			
3/19/2012 - 3/23/2012 **Princeton, NJ**	**5/14/2012 - 5/18/2012** **Princeton, NJ**	**9/17/2012 - 9/21/2012** **Rosemont, IL**	**10/15/2012 - 10/19/2012** **Las Vegas, NV**
Chilworth Global 113 Campus Drive Princeton, NJ 08540* Register & Pay Here for this series of five day courses: **Click Here**	Chilworth Global 113 Campus Drive Princeton, NJ 08540* Register & Pay Here for this series of five day courses: **Click Here**	Chicago Marriott Suites O'Hare 6155 N. River Road Rosemont, IL 60018 847-696-4400 Register & Pay Here for this series of five day courses: **Click Here**	Harrah's Las Vegas 3475 Las Vegas Blvd South Las Vegas, NV 89109 1-888-458-8471 Register & Pay Here for this series of five day courses: **Click Here**

UNDERSTANDING & CONTROLLING ELECTROSTATIC HAZARDS (1-Day)

CEUs: 0.6

Course Design and Objectives
This course will demonstrate how and where electrostatic charge is generated, how to analyze static problems, and how to apply effective solutions. Practical static control techniques will be illustrated by examining case histories of explosion incidents investigated by Chilworth Global consultants.

Who Should Attend
Personnel (e.g., management, technical, operations and maintenance) involved with process safety, EH&S, process design, operations and maintenance from the chemical & processing industries, including bulk and finished pharmaceuticals, chemicals, petrochemicals, oil and gas, food, plastic & rubber, metals, textiles, wood & paper and agrochemicals who desire a more in depth understanding of electrostatic hazards.

You Will Learn
- How electrostatic charge is generated in industrial environments
- How to recognize those electrostatic hazards that can trigger industrial fires and explosions
- How to choose methods to evaluate and control electrostatic charge in order to reduce or eliminate such risks

Course Outline
- **Introduction to Electrostatics**
  - Background Information and Definitions
- **Types of Electrostatic Discharges**
  - Four Types of Discharges
  - Evaluation of discharges in terms of incendivity in Gas, Vapor, Aerosol and Dust Cloud Flammable Atmospheres
  - Hands-on Demonstration of various types of discharges in the laboratory
- **Factors Affecting Electrostatics**
  - Relative Humidity
  - Temperature
  - Resistivity of Powders and Liquids
  - Transport Mechanism (pneumatic, screw, spray, manual pouring etc)
  - Immiscible Flows
- **Tests to Evaluate Electrostatic Characteristics of Powders and Liquids**
  - Volume Resistivity and Charge Relaxation Time – Powder
  - Chargeability – Powder
  - Conductivity – Liquid
  - Chargeability – Liquid
  - Hands-on Demonstration of Various types of Electrostatic Tests in Laboratory
- **Electrostatic Hazards Evaluation**
  A systematic approach to the diagnosis of electrostatic hazards associated with:
  - People, Equipment and Facilities
  - Powder Handling
  - Liquid-Vapor Handling
  - Use of Plastics
  - Use of Flexible Intermediate Bulk Containers (FIBCs) (Super sacks)

Video Presentation
Case Studies
Q&A/Group Discussion
Quiz
Course Evaluation Feedback Form

Public Course Offering

Price: $595.00

Dates & Locations:

UNDERSTANDING & CONTROLLING ELECTROSTATIC HAZARDS (1-Day)			
3/19/2012	**5/14/2012**	**9/17/2012**	**10/15/2012**
Chilworth Global 113 Campus Drive Princeton, NJ 08540* Register & Pay Here for this date & location: **Click Here**	Chilworth Global 113 Campus Drive Princeton, NJ 08540* Register & Pay Here for this date & location: **Click Here**	Chicago Marriott Suites O'Hare 6155 N. River Road Rosemont, IL 60018 847-696-4400 Register & Pay Here for this date & location: **Click Here**	Harrah's Las Vegas 3475 Las Vegas Blvd South Las Vegas, NV 89109 1-888-458-8471 Register & Pay Here for this date & location: **Click Here**

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DUST EXPLOSION PREVENTION & PROTECTION TECHNIQUES (1-Day)

CEUs: 0.6

Course Design and Objectives
This course will demonstrate the techniques available for both preventing dust explosions and protecting people and facilities from their effects. It employs a systematic approach to dust explosion hazard assessment directed towards obtaining a Basis of Safety for a process.

Who Should Attend
Personnel (e.g., management, technical, operations and maintenance) involved with process safety, EH&S, process design, operations and maintenance from the chemical & processing industries, including bulk and finished pharmaceuticals, chemicals, petrochemicals, oil and gas, food, plastic & rubber, metals, textiles, wood & paper and agrochemicals who desire a more in depth understanding of dust explosion hazards.

You Will Learn
- How to analyze various conditions under which dust explosions can occur
- How to compare the techniques to prevent dust explosions
- How to apply suitable measures for protection of people and facilities from the effects of an explosion
- The role of Codes and Standards in evaluating risks
- How to choose methods to estimate dust hazard properties

Course Outline
- **Introduction**
  - Basic Theory and Definitions
  - History of Dust Explosions
  - Conditions for a Dust Explosion
- **Dust Hazard Codes & Standards**
  - OSHA's & EPA's "General Duty" clauses
  - OSHA Instructions on Combustible Dust – National Emphasis Program
  - U.S. and International Fire, Mechanical & Building Codes
  - NFPA and other Recommended Practices
  - How Codes and Standards Apply to Your Facility and Workplace: Case Study
- **Combustibility Assessment Using Standardized Laboratory Testing**
  - Ignition Sensitivity
  - Explosion Severity
  - Thermal Instability
  - Hands-on Demonstration of Various Types of Dust Tests in the Laboratory
- **Conditions Affecting Combustibility**
  - Oxidant
  - Temperature
  - Physical Characteristics
  - Moisture
- **Dust Explosion Hazard Control (Basis of Safety)**
  - Avoiding Flammable Concentrations
  - Avoiding Ignition Sources
  - Avoiding Oxidant
  - A Problem-Solving Workshop to Evaluate the Explosion Hazard of Dust Handling Equipment
- **Explosion Protection Techniques**
  - Pressure Relief Venting
  - Suppression
  - Containment
  - Isolation

Video Presentation
Case Studies
Q&A/Group Discussion
Quiz
Course Evaluation Feedback Form

Public Course Offering

Price: $595.00

Dates & Locations:

DUST EXPLOSION PREVENTION & PROTECTION TECHNIQUES (1-Day)			
3/20/2012	**5/15/2012**	**9/18/2012**	**10/16/2012**
Chilworth Global 113 Campus Drive Princeton, NJ 08540* Register & Pay Here for this date & location: **Click Here**	Chilworth Global 113 Campus Drive Princeton, NJ 08540* Register & Pay Here for this date & location: **Click Here**	Chicago Marriott Suites O'Hare 6155 N. River Road Rosemont, IL 60018 847-696-4400 Register & Pay Here for this date & location: **Click Here**	Harrah's Las Vegas 3475 Las Vegas Blvd South Las Vegas, NV 89109 1-888-458-8471 Register & Pay Here for this date & location: **Click Here**

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EXPLOSION HAZARDS OF GASES & VAPORS IN THE PROCESS INDUSTRIES (1-DAY)

CEUs: 0.6

Course Design and Objectives
This course is designed to enable engineers and process safety personnel who are involved with chemical processes and operations to identify the hazards associated with flammable gases, vapors, and mists. The course overviews flammability properties, testing methods, and practical explosion prevention techniques. The course also includes short participant exercises.

Who Should Attend
Personnel (e.g., management, technical, operations and maintenance) involved with process safety, EH&S, process design, operations and maintenance from the chemical & processing industries, including bulk and finished pharmaceuticals, chemicals, petrochemicals, oil and gas, food, plastic & rubber, metals, textiles, wood & paper and agrochemicals who desire a more in depth understanding of gas & vapor explosion hazards.

You Will Learn
- How to assess the flammability hazards associated with gas, vapor and mist atmospheres
- How to apply a Basis of Safety for your operations

Course Outline
- **Introduction to Flammable Atmospheres**
  - Basic Theory and Definitions
- **Flammability of Vapors, Gases and Mists**
  - Flammability Properties: Flash Points, Temperature Limit of Flammability, Flammable Ranges, Explosion Severity, Autoignition Temperatures, Limiting Oxidant Concentration
  - Testing Methods
  - Operating Conditions that Affect Flammability Properties
- **Conditions Affecting Flammability Properties**
  - Temperature, Pressure, Oxidant, Mixtures
- **Establishing a Basis of Safety**
  - Avoiding Ignition Sources
  - Static Electricity, Friction, Impact, Electrical Equipment
  - Avoiding Flammable Concentrations
  - Ventilation, Temperature Control
  - Avoiding Oxidant
  - Inert Gas Blanketing
  - Minimizing Consequences of Fire
  - Venting, Isolation, Suppression

Q&A/Group Discussion
Quiz
Course Evaluation Feedback Form

Public Course Offering

Price: $595.00

Dates & Locations:

EXPLOSION HAZARDS OF GASES & VAPORS IN THE PROCESS INDUSTRIES (1-Day)			
3/21/2012	**5/16/2012**	**9/19/2012**	**10/17/2012**
Chilworth Global 113 Campus Drive Princeton, NJ 08540* Register & Pay Here for this date & location: **Click Here**	Chilworth Global 113 Campus Drive Princeton, NJ 08540* Register & Pay Here for this date & location: **Click Here**	Chicago Marriott Suites O'Hare 6155 N. River Road Rosemont, IL 60018 847-696-4400 Register & Pay Here for this date & location: **Click Here**	Harrah's Las Vegas 3475 Las Vegas Blvd South Las Vegas, NV 89109 1-888-458-8471 Register & Pay Here for this date & location: **Click Here**

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EVALUATION AND SELECTION OF ELECTRICAL AND NON-ELECTRICAL EQUIPMENT FOR USE IN HAZARDOUS AREAS (1-DAY)

CEUs: 0.6

Course Design and Objectives

Incorrectly specified electrical and mechanical equipment can provide a significant source of ignition for flammable atmospheres. The hazardous area classification process is designed to identify locations within a process plant where ignitable atmospheres exist, and to determine their likely extent. Using this information, the risk of ignition from equipment and devices in these areas can be minimized by either the specification of suitable equipment/devices, or relocating them to a safe, non-hazardous area.

Who Should Attend

Personnel (e.g., management, technical, operations and maintenance) involved with process safety, EH&S, process design, operations and maintenance from the chemical & processing industries, including bulk and finished pharmaceuticals, chemicals, petrochemicals, oil and gas, food, plastic & rubber, metals, textiles, wood & paper and agrochemicals who desire a more in depth understanding of how to evaluate and select electrical and non-electrical equipment for use in hazardous areas.

You Will Learn

- Ignition hazards that can be created by electrical and non-electrical equipment and devices
- The regulatory requirements of codes and standards for the classification of hazardous areas
- How to perform a hazardous area classification study
- The classification of areas where flammable atmospheres can arise from the presence of combustible dusts, flammable gases or vapors

Course Outline

- **Introduction**
  - Overview of Regulatory Requirements
  - Relevant Codes, Standards, and Guidelines: NFPA, EN, ATEX, etc.
  - Introduction to Fire and Explosion Hazards
  - Flammability Characteristics Relevant to Ignition Sensitivity and Hazardous Area Classification
- **Methodology for Hazardous Area Classification**
  - Identification of Hazardous (Classified) Areas or Zones, Class I, Class II and Class III
  - North American and International Hazardous Area Designation
  - Classifying and Determining the Extent of Areas Containing Flammable Gases, Vapors, and Dusts
  - Effects of Ventilation, Temperature, and Pressure on the Extent of Zones
- **Assessment of Non-Electrical Equipment and Components Intended for Use in Ignitable Atmospheres**
  - Ignition Hazards associated with Non-Electrical Equipment and Devices
  - Methodology of the Assessment
- **Selection of the Electrical Equipment for Hazardous Areas**
  - Methods of Protection and Summary of Commonly Used Protection Methods for Different Divisions & Zones
  - Ingress Protection: IP Codes. NEMA and UL Types of Enclosures
  - Intrinsic Safety

Workshops
Q&A/Group Discussion
Quiz
Course Evaluation Feedback Form

Public Course Offering

Price: $595.00

Dates & Locations:

EVALUATION AND SELECTION OF ELECTRICAL AND NON-ELECTRICAL EQUIPMENT FOR USE IN HAZARDOUS AREAS (1-Day)			
3/22/2012	**5/17/2012**	**9/20/2012**	**10/18/2012**
Chilworth Global 113 Campus Drive Princeton, NJ 08540* Register & Pay Here for this date & location: **Click Here**	Chilworth Global 113 Campus Drive Princeton, NJ 08540* Register & Pay Here for this date & location: **Click Here**	Chicago Marriott Suites O'Hare 6155 N. River Road Rosemont, IL 60018 847-696-4400 Register & Pay Here for this date & location: **Click Here**	Harrah's Las Vegas 3475 Las Vegas Blvd South Las Vegas, NV 89109 1-888-458-8471 Register & Pay Here for this date & location: **Click Here**

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CHEMICAL REACTION HAZARDS (1-Day)

CEUs: 0.6

Course Design and Objectives

The risk analysis of reactive systems is an essential tool to ensure safety prior to process operations. Reaction study provides an insight into the complex interaction of a wide range of factors that influence the probability and consequences of undesired safety incidents involving chemical reaction, energies, equipment, personnel and productivity.

Who Should Attend

The course will benefit attendees from a broad spectrum of backgrounds and job responsibilities including chemical engineers, process engineers/scientists, plant/process safety/risk managers, facilities managers and all others who need to be aware of the risks and hazards that can lead to accidents, injuries, property damage and business interruptions to the plant.

You Will Learn

The course will teach participants how to assess chemical reactivity through:

- Use of Chemical Engineering Principles to study the potential runaway reactions for storage and reactor risk assessments
- Small-scale studies
- Performing risk analysis of chemical processes
- Development of inherently safer processes

Problem solving sessions are included throughout the course, and the course incorporates case study scenarios to illustrate and extend the material.

This course is designed to identify and recognize the thermal and chemical reactivity hazards associated with a chemical process based on the principles of scale-up and development. Participants will learn how to decipher the results of the preliminary screening tests by using the chemical engineering concepts relating to safe plant operation and will become familiar with the latest techniques for the optimization of the processes.

Course Outline

- **Introduction**
- **Where Hazards Arise**
  - Case Histories Involving Runaway Reactions and Current Legislation
- **Chemical Reaction Hazard (CRH) Assessment Strategy**
  - CRH vs. Process Life Cycle
- **Fundamental Principles of Scale-up and Reaction Runaway**
  - Vapor Pressure Effects
  - Heat of Reaction
  - PHI Factor
  - Adiabatic Temperature Rise
  - Reaction Rate
  - Reaction Kinetics
  - Kinetics of Heat Release/Loss
  - Heat Loss Considerations
  - Reactant Accumulation
- **Small Scale Screening Tests**
- **Identification of Highly Energetic Materials**
  - Strategy for Assessing Explosivity
  - Oxygen Balance
  - CHETAH Calculations
  - Testing for Explosive Properties
- **Reaction Characterization Through Calorimetry**
- **Characterization of Thermal Runaway Reaction Through Adiabatic Calorimetry**
  - Accelerating Rate Calorimetry
  - Adiabatic Dewar Calorimetry
  - Pressure Compensated Calorimetry

- **Inherently Safe Process**
  - Safe Process
  - Integrating Safety Considerations into Process Design

Problem Solving Sessions
Video Presentation
Q&A/Group Discussion
Quiz
Course Evaluation Feedback Form

You will need to bring a scientific calculator to this course.

Public Course Offering

Price: $595.00

Dates & Locations:

CHEMICAL REACTION HAZARDS (1-Day)			
3/23/2012	**5/18/2012**	**9/21/2012**	**10/19/2012**
Chilworth Global 113 Campus Drive Princeton, NJ 08540* Register & Pay Here for this date & location: **Click Here**	Chilworth Global 113 Campus Drive Princeton, NJ 08540* Register & Pay Here for this date & location: **Click Here**	Chicago Marriott Suites O'Hare 6155 N. River Road Rosemont, IL 60018 847-696-4400 Register & Pay Here for this date & location: **Click Here**	Harrah's Las Vegas 3475 Las Vegas Blvd South Las Vegas, NV 89109 1-888-458-8471 Register & Pay Here for this date & location: **Click Here**

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WEBINARS

PSM Alert - OSHA Chemical Facility National Emphasis Program (NEP) for Process Safety Management (PSM) is now Issued Nationwide (1-Hour)

Date: January 25, 2012
Time: 2:00–3:00 pm Eastern Time
Cost: $120.00
CEU Credits: 0.1 CEU Credits*
[Registration Information Below]

Webinar Overview

The new Chemical Facility National Emphasis Program, NEP establishes policies and procedures for inspecting facilities nationwide that are covered by OSHA's process safety management (PSM) standard. This 60 minute webinar will review the key aspects of the Chemical Facility NEP, the key differences from previous NEPs addressing compliance with PSM, what to expect if your facility winds up on the inspection list, lessons learned from both the facility and OSHA perspectives, and the necessary steps to take in order to prepare for a NEP inspection.

Benefits of Participation

After participating in the webinar, participants will have an overall understanding of the Chemical Facility NEP, who it applies to, OSHA's implementation plan, what to expect during an NEP inspection and how to assess current compliance and steps necessary to develop a NEP compliance plan.

Webinar Outline

- What's it all about – Chemical Facility NEP Overview
- OSHA's Strategy
- What We've Learned from OSHA's NEP Initiatives
- What's Necessary to Ensure Compliance – Management System Basics
- How to Get Ready – Developing a NEP Compliance Plan

REGISTRATION INFORMATION

PSM ALERT – OSHA FACILITY NATIONAL EMPHASIS PROGRAM (NEP) FOR PROCESS SAFETY MANAGEMENT (PSM) IS NOW ISSUED NATIONWIDE (1-Hour)

Date: January 25, 2012 **Time: 2:00 – 3:00pm Eastern Time** **Cost: $120.00**
To register for the webinar **click here:** **Register and Pay**
Upon registration, webinar log-in information will be emailed to you.
*0.1 CEU Credits may be applied following a completion and passing grade of a quiz and completion of Evaluation Feedback Form.

No refunds will be issued once registered. Credit may be arranged.

WEBINARS

Hazard Communication Alert – Are You Ready for OSHA's New HAZCOM Standard – Understanding the Impact on Physical Hazard Characterization & Testing (1-Hour)

Date: February 29, 2012
Time: 2:00–3:00 pm Eastern Time
Cost: $120.00
CEU Credits: 0.1 CEU Credits*
[Registration Information Below]

Webinar Overview

It has taken over 5 years for OSHA's revised Hazard Communication Standard (HCS), which adopts the Globally Harmonized System of Classification and Labeling of Chemicals (GHS) to work through the regulatory process. Since October 27, 2011 the revised standard has been under a final 90 day review within the Office of Management and Budget (OMB). This rule will impact every workplace in the US subject to OSHA regulation. Now is the time to reacquaint yourself with the proposed changes originally published on September 30, 2009. Join us for a timely webinar when our speaker-an experienced HAZCOM & product stewardship expert, will review the current status of the rule and the changes you can expect. If your organization is a chemical manufacturer, importer or distributer; you won't want to miss this update.

Benefits of Participation

After participating in the webinar, participants will have an overall understanding of the revised HCS, what the GHS is and why your understanding of it is crucial, how the proposed OSHA rule could affect your workplace & regulatory compliance responsibilities. A review of available resources that can help you come into compliance right away, and a look at related regulatory initiatives around the globe that should be on your radar.

Webinar Outline

- Understanding The Origins Of GHS
- Overview Of Major Proposed Changes To The HCS
- Detailed Review By Section Of What You Need To Be Prepared For
- Highlights Of Other Related Regulatory Initiatives US Companies Need To Be Aware Of
- How To Get Ready – Things To Consider

REGISTRATION INFORMATION

Hazard Communication Alert – Are You Ready for OSHA's New HAZCOM Standard – Understanding the Impact on Physical Hazard Characterization & Testing (1-Hour)

Date: February 29, 2012 **Time: 2:00 – 3:00pm Eastern Time** **Cost: $120.00**
To register for the webinar, click here: **Register and Pay**
Upon registration, webinar log-in information will be emailed to you.
*0.1 CEU Credits may be applied following a completion and passing grade of a quiz and completion of Evaluation Feedback Form.
No refunds will be issued once registered. Credit may be arranged.

WEBINARS

Evaluating the Reactivity Hazards of Waste Materials (1-Hour)

Date: April 24th, 2012
Time: 2:00-3:00 pm Eastern Time
Cost: $120.00
CEU Credits: 0.1 CEU Credits*
[Registration Information Below]

Webinar Overview

There have been several incidents in the past related to the storage and/or inadvertent mixing of waste streams. The webinar will review some of the recent incidents related to the handling/storage of waste materials. The fundamental principles of adverse reactions will be discussed followed by an overview of tools and procedures for desktop adverse reaction screening. Laboratory calorimetry methods along with the interpretation of data will be discussed.

Benefits of Participation

After participating in the webinar, participants will have an overall understanding of the reactivity issues associated with the handling and/or storage of waste materials. A review of available resources that can help you understand the hazards associated with the waste materials will be conducted. You will be familiar with the appropriate tests and interpret the data collected from these tests.

Webinar Outline

- Background Information to Understand the Reactivity Hazards of Waste Materials
- Fundamentals of Adverse Reactions
- Adverse Reaction Screening Procedures
- Overview of Laboratory Test Methods
- Interpretation of Test Data

REGISTRATION INFORMATION

Evaluating the Reactivity Hazards of Waste Materials (1-Hour)

Date: April 24, 2012 **Time: 2:00 – 3:00pm Eastern Time** **Cost: $120.00**
To register for the webinar, click here: **Register & Pay**
Upon registration, webinar log-in information will be emailed to you.
*0.1 CEU Credits may be applied following a completion and passing grade of a quiz and completion of Evaluation Feedback Form.
No refunds will be issued once registered. Credit may be arranged.

WEBINARS

Process Hazard Analysis (PHA) Revalidations – Scope, Requirements and Methods (1-Hour)

Date: April 26, 2012
Time: 2:00-3:00pm Eastern Time
Cost: $120.00
CEU Credits: 0.1 CEU Credits*
[Registration Information Below]

Webinar Overview

OSHA's PSM Standard, Chemical NEP, Refinery NEP, as well as applicable NFPA and industry standards, stipulate the performance of Process Hazard Analyses (PHAs) of hazardous plant processes. Among other requirements, PHAs must be updated and revalidated as needed to ensure that the documentation of process hazards discussed therein is current, correct, and complete. This webinar discusses in detail how employers can meet the revalidation requirements of the applicable standards, including the requirements for documentation of revalidation scope, method, and intent. In addition, the webinar will emphasize the relationship between properly updated and revalidated PHAs and effective management of other PSM elements, including process safety information, standard operating procedures, emergency response and mechanical integrity programs.

Benefits of Participation

After participating in the webinar, participants will have an overall understanding of the why it is crucial to revalidate a Process Hazards Analysis (PHA), the key requirements for a revalidated PHA, employer options for revalidating a PHA, and the interrelationships between a revalidated PHA and other process safety elements and programs such as Management of Change (MOC) This webinar highlights available resources that can help you come into compliance right away, and takes a look at related regulatory initiatives around the globe that should be on your radar.

Webinar Outline

- Understanding the Origins Of Process Hazard Analyses (PHAs)
- Overview Of Major Requirements for PHA Revalidations
- Detailed Review Of What You Need To Meet the Revalidation Requirements
- Highlights Of Related Regulatory Requirements that U.S. Companies Need To Be Aware Of
- How To Take the Next Step – Things To Consider

REGISTRATION INFORMATION

Process Hazard Analysis (PHA) Revalidations – Scope, Requirements and Methods (1-Hour)

Date: April 26, 2012 **Time: 2:00 – 3:00pm Eastern Time** **Cost: $120.00**
To register for the webinar, click here: **Register and Pay**
Upon registration, webinar log-in information will be emailed to you.
*0.1 CEU Credits may be applied following a completion and passing grade of a quiz and completion of Evaluation Feedback Form.
No refunds will be issued once registered. Credit may be arranged.

WEBINARS

Mechanical Integrity Element of PSM – Beyond Inspection, Testing and Maintenance (1-Hour)

Date: June 20th, 2012
Time: 2:00-3:00 pm Eastern Time
Cost: $120.00
CEU Credits: 0.1 CEU Credits*
[Registration Information Below]

Webinar Overview

Mechanical Integrity (MI) programs continue to be the source of a large number of OSHA citations, including following a Chemical NEP or Refinery NEP inspection. For most employers, the requirements of the MI element of OSHA's Process Safety Management (PSM) Standard involve regular inspection, testing and maintenance of covered process equipment, with implementation responsibility residing in the maintenance department. This webinar discusses the necessity for MI efforts to extend beyond inspection, testing and maintenance and provides guidelines for actively involving management, operations, EHS, contractors, and others in effective implementation of the MI program element. The webinar also addresses the importance of implementing MI activities at all phases of the lifecycle of covered process equipment. MI activities that will be reviewed include: written policies and procedures, training, deficiency management, and quality assurance. Integration of the MI program with the requirements of other PSM Standard elements will also be discussed.

Benefits of Participation

After participating in the webinar, participants will have an overall understanding of why it is crucial to consider mechanical integrity for equipment covered by the PSM standard during the entire life cycle of the equipment – from design through installation, commissioning, operation, maintenance, decommissioning, and demolition. Participants will gain a greater understanding of the inter-related activities that are essential to maintaining equipment integrity during day-to-day operation and during startup / shutdown operations. This webinar identifies tools and resources that can help you assess the status of your current MI program and improve your existing program. `

Webinar Outline

- Requirements of the OSHA PSM Standard for Mechanical Integrity (MI) Programs
- Scope and Applicability of a Site-Specific MI Program
- Developing and Documenting MI Program Activities
- Roles and Responsibilities of the MI Program – what are the options?
- Pitfalls – Commonly Found Gaps in Compliance
- Resources for Assessing and Managing the Effectiveness of an MI Program
- Summary and Conclusion

REGISTRATION INFORMATION

Mechanical Integrity Element of PSM – Beyond Inspection, Testing and Maintenance

Date: June 20, 2012 **Time: 2:00 – 3:00pm Eastern Time** **Cost: $120.00**
To register for the webinar, click here: **Register and Pay**
Upon registration, webinar log-in information will be emailed to you.
*0.1 CEU Credits may be applied following a completion and passing grade of a quiz and completion of Evaluation Feedback Form.
No refunds will be issued once registered. Credit may be arranged.

WEBINARS

What is Your Bonding & Grounding Strategy? (1-Hour)

Date: June 27th, 2012
Time: 2:00-3:00 pm Eastern Time
Cost: $120.00
CEU Credits: 0.1 CEU Credits*
[Registration Information Below]

Webinar Overview

Sparks from ungrounded charged conductors, including the human body, are responsible for majority of the fires and explosions ignited by static electricity. The webinar will review the fundamentals of electrostatics related to spark discharges and discuss the strategy of grounding and bonding.

Benefits of Participation

After participating in the webinar, participants will have an overall understanding of the hazards related to electrostatic spark discharges. You will be familiar with the identification of operations where isolation of conductors could occur. A review of the grounding and bonding techniques will be conducted. You will be familiar with the appropriate tests to conduct to determine the electrostatic sensitivity of your material and interpret the data collected from these tests.

Webinar Outline

- Background Information to Understand Electrostatic Spark Discharge Hazards
- Types of Conductors
- Bonding and Grounding Strategy
- Overview of Laboratory Test Methods to Determine Electrostatic Sensitivity
- Interpretation of Test Data

REGISTRATION INFORMATION

What is Your Bonding and Grounding Strategy?

Date: June 27, 2012 **Time: 2:00 – 3:00pm Eastern Time** **Cost: $120.00**

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WEBINARS

Safeguarding Your Process Against Gas and Vapor Explosion (1-Hour)

Date: August 30th, 2012
Time: 2:00-3:00 pm Eastern Time
Cost: $120.00
CEU Credits: 0.1 CEU Credits*
[Registration Information Below]

Webinar Overview

Many industries use flammable chemicals (liquids and/or gases) and chemical mixtures as a part of their processes. These flammable chemicals could present a substantial hazard in the form of fire or explosion during the handling, processing, and storage of these chemicals or if containment is lost through a leak, spill, or rupture of equipment. The webinar will review the fundamentals of gas/vapor flammability and discuss the practical measures that are used to reduce the risk of a fire and explosion hazard.

Benefits of Participation

After participating in the webinar, participants will learn to identify the conditions that create a flammable or explosible hazard in an operation. You will also become familiar with the measures that can be used to reduce the risk of a fire or explosion in a process. A review of the safety-critical flammability properties and its application will also be conducted.

Webinar Outline

- Introduction to Gas/Vapor Flammability – Basic Theory
  - ✓ Requirements for a Fire
  - ✓ Requirements for an Explosion
- Flammability Properties of Gases, Vapors and Liquids
- Measures to Reduce the Risk of a Fire or Explosion
  - ✓ Prevent the Formation of an Ignitable Mixture
  - ✓ Minimize/Address All Ignition Sources
  - ✓ Mitigating the Consequences of a Fire or Explosion

REGISTRATION INFORMATION

Safeguarding Your Process Against Gas and Vapor

Date: August 30, 2012 **Time: 2:00 – 3:00pm Eastern Time** **Cost: $120.00**

To register for the webinar, click here: **Register and Pay**
Upon registration, webinar log-in information will be emailed to you.
*0.1 CEU Credits may be applied following a completion and passing grade of a quiz and completion of Evaluation Feedback Form.
No refunds will be issued once registered. Credit may be arranged.

2012 Training Course Schedule – United States

Course Title	Duration	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Webinar – "OSHA Chemical Facility National Emphasis Program (NEP) for Process Safety Management (PSM) is Now Issued Nationwide"	1 Hour	1/25 online											
Webinar – "Hazard Communication Alert –Are you Ready for OSHA's New HAZCOM Standard	1 Hour		2/29 Online										
Preparations for an OSHA Dust Explosion Hazard Inspection	1 Day		2/23 NJ				6/14 NJ				10/24 NJ		
Understanding & Controlling Electrostatic Hazards	1 Day			3/19 NJ		5/14 NJ				9/17 Chicago, IL	10/15 Las Vegas, NV		
Dust Explosion Prevention & Protection Techniques	1 Day			3/20 NJ		5/15 NJ				9/18 Chicago, IL	10/16 Las Vegas, NV		
The Explosion Hazards of Gases & Vapors in the Process Industries	1 Day			3/21 NJ		5/16 NJ				9/19 Chicago, IL	10/17 Las Vegas, NV		
Evaluation & Selection of Electrical & Non-Electrical Equipment for Use in Hazardous Areas	1 Day			3/22 NJ		5/17 NJ				9/20 Chicago, IL	10/18 Las Vegas, NV		
Chemical Reaction Hazards	1 Day			3/23 NJ		5/18 NJ				9/21 Chicago, IL	10/19 Las Vegas, NV		
Scale-Up of Chemical Processes and the Risk of Thermal Runaway	2 Days				4/10-4/11 NJ							11/13-11/14 NJ	
Process Safety Management (PSM) Essentials	1 Day				4/24 Houston, TX								
Effective Implementation of Process Safety Management (PSM) Programs	2 Day				4/25-4/26 Houston, TX								
Beyond Compliance: Development & Implementation of PSM in the Workplace	2 Day											11/6-11/7 IN 11/27 – 11/28 NJ	
Webinar – "Evaluating the Reactivity Hazards of Waste Materials	1 Hour				4/24 Online								
Webinar – "Process Hazard Analysis (PHA) Revalidations – Scope, Requirements and Methods"	1 Hour				4/26 Online								
Webinar – "Mechanical Integrity Element of PSM	1 Hour						6/20 Online						
Webinar – "What is Your Bonding & Grounding Strategy?"	1 Hour						6/27 Online						
Webinar – "Safeguarding Your Process Against Gas and Vapor Explosion	1 Hour								8/30 Online				

2012 Training Course Details – United States

All NJ locations will be located at:

Chilworth Global
113 Campus Drive
Princeton, NJ 08540
609-799-4449

A list of hotels in the area can be provided for overnight stays.

Schaumburg, IL locations will be located at:
Chicago Marriott Suites O'Hare
6155 N. River Road
Rosemont, IL 60018
847-696-4400

Houston, TX locations will be located at:
Houston Airport Marriott at George Bush Intercontinental
18700 John F. Kennedy Blvd.
Houston, TX 77032
281-443-2310

Las Vegas, NV locations will be located at:
Harrah's Las Vegas*
3475 Las Vegas Blvd South
Las Vegas, NV 89109
1-888-458-8471

Indianapolis, IN locations will be located at:
Hilton Garden Inn Indianapolis Downtown
10 East Market Street
Indianapolis, IN 46204
1-317-955-9700

REGISTRATION

You can register and pay for any date and location by going to the bottom of each training course detail page and clicking "Register & Pay Here for this date and location" or you can click on the State location in RED on the following calendar. We accept VISA, MasterCard & American Express. You will receive a confirmation of registration emailed to you following your registration. Course fees include continental breakfast, breaks and lunch.

Each day of training starts at 9:00am and ends at 5:00pm.

Cancellation Policy
Absolutely NO refunds will be made if cancellations are made within 30 days prior to the course date; a possible credit may be arranged. Chilworth reserves the right to make last minute changes and/or cancellations.

Hotel Reservations
Hotel Reservations must be made directly with each hotel. The cost of accommodations is NOT included in the course fee. Hotel parking fees may apply. We strongly recommend making reservations as early as possible. *Harrah's Las Vegas location will only keep the Chilworth Group Block of rooms until 30 days prior to the course start date; after 30 days our group rates no longer apply and reservations are on a first come, first serve basis.

CONTACT DETAILS

If you have any questions or need further details on registration or on any of our training course offerings, please contact: Victoria R. Jones, Marketing Coordinator or Robin Angelini, Marketing Asst. at 609-799-4449 or email safety-usa@chilworthglobal.com.

2012 International Training Course Schedules – United Kingdom and Ireland

Course Title	Duration	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Practical DSEAR / ATEX	4 Days		2/7 - 2/10 Cork		4/24-4/27 So'ton					9/18-9/21 M'chster			
Compatibility Assessment in The Waste Treatment Industry	1 Day		2/21 Leeds										
SIL Assessments and Functional Safety	3 Days			3/20-3/22 N'castle							10/2–10/4 Dublin		
Practical HAZOP Leadership in Action	3 Days			3/27–3/29 London						9/11–9/13 Leeds			
Design, Development and Scale-Up of Safe Chemical Processes	3 Days					5/22–5/24 W'chster							
Quantified Risk Assessment in Practice	2 Days				4/17–4/18 E'burgh						10/9–10/10 B'ham		
ATEX 95 & 137 – Equipment in Hazardous Areas	2 Days						6/20-6/21 London					11/30-12/1 Arnhem	
Major Fire Risk Assessment in Manufacturing Environments	1 Day									9/27 London			
EPD / DSEAR Documentation – Do's & Don'ts	1 Day						6/15 Cork						
Ignition Sources, Myths and Realities	1 Day					5/17 Not'ham							
Safe Drying of Powders on an Industrial Scale	1 Day		2/29 B'ham										
Process Safety Information, the Cornerstone of PSM	1 Day			3/14 M'chster			6/27 So'ton						
Problem Solving via Static Measurement & Assessment	1 Day			3/8 So'ton						9/14 Dublin			
Predicting Chemical Reaction Hazards (CRH)	1 Day										10/24 So'ton		
Emergency Relief System Design											10/25 So'ton		
FREE 60 minute webinar series "Practical Applications of Process Safety in - (*PHC = Personal Health Care)	Food Manufacturing				4/12								
	Brewing & Distilling					5/29							
	PHC* Manufacturing						6/12						
	DSEAR & Pilot Plants									9/5			

2012 International Training Course Schedules – Belgium, Sweden and Netherlands

Course Title	Duration	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
SIL Assessments and Functional Safety	2 Days		2/16-2/17 Antwerp										
Ignition Sources, Electrostatic Hazards	1 Day			3/8 Eindhoven									
Practical HAZOP Leadership	3 Days				4/5-4/6 Eindhoven - Rotterdam								
Chemical Reaction Hazards	1 Day					5/11 Antwerp							
Practical Aspects of ATEX	4 Days									9/18-9/21 Antwerp			
NEW – ATEX Compliance for Equipment Manufacturers and Operating Companies	2 Days										10/18-10/19 Arnhem		

2012 International Training Course Schedules – France (Presented in French)

Course Title	Duration	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Practical Aspects of ATEX	2 Days		2/7-2/8 Paris										12/4-12/5 Lyon
ATEX for Labs & Pilot Plants	1 Day	1/24 Paris										11/20 Lyon	
From Lab to Plant: Hazards in Process Industries	2 Days		2/9-2/10 Paris										12/6-12/7 Lyon
Electrostatic Hazards	2 Days			3/13-3/14 Lyon							10/2-10/3 Paris		
Dust Explosions	1 Day			3/27 Lyon						9/11 Paris			
Gas Explosions	1 Day			3/28 Lyon						9/12 Paris			
Ignition Sources	1 Day			3/29 Lyon						9/13 Paris			
Chemical Reaction Hazards	1 Day			3/30 Lyon						9/14 Paris			
Introduction to the Design of Emergency Relief Systems	1 Day					5/21 Paris				9/24 Lyon			
Consequence modeling	1 Day					5/22 Paris				9/25 Lyon			
Practical Process Hazards Analysis Leadership (HAZOP, …)	3 Days					5/23-5/25 Paris				9/26-9/28 Lyon			
Safety of Drying Operations	1 Day						6/14 Lyon						
SIL Assessments & Functional Safety	2 Days				4/3-4/4 Lyon						10/15-10/16 Paris		
Design of Emergency Relief Systems – Non Reactive Systems	1 Day										10/17 Paris		
Design of Emergency Relief Systems – Reactive Systems	2 Days										10/18-10/19 Paris		
Lessons from Process Incidents	1 Day			3/20 Paris								11/13 Lyon	
Incident Investigation: Methods & Case Studies	2 Days			3/21-3/22 Paris								11/14-11/15 Lyon	

2012 International Training Course Schedules – Italy (Presented in Italian)

Course Title	Duration	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
ATEX	2 Days		2/22-2/23 Milan					7/4-7/5 Rome					
HAZOP	2 Days	1/25-1/26 Milan					6/13-6/14 Siracuse				10/24-10/25 Rome		
Static Risks	1 Day						6/21 Milan					11/14-11/15 Milan	
Pressure Equipment Directive, Vent Sizing/DIERS	2 Days			3/13-3/14 Milan									
SIL	2 Days				4/4-4/5 Siracuse						10/2-10/3 Milan		
Scale-up and Chemical Reactions Safety	1 Day				4/18 Milan								
Powder Explosion	1 Day					5/10 Milan							12/4 Rome
Gas and Vapors Explosion	1 Day			3/21 Milan									
QRA	2 Days		2/15-2/16 Siracuse							9/26-9/27 Milan			
PSM	1 Day					5/24 Milan							
Consequence Modeling	2 Days					5/17-5/18 Milan							
Powder Explosion Testing	1 Day				4/12 Milan					9/20 Rome			

2012 International Training Course Schedules – Spain (Presented in Spanish)

Course Title	Duration	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
HAZOP Methodology and Practical Leadership in Action	2.5 Days			3/21-3/23 Madrid 3/28-2/30 Bilbao		5/9-5/11 Barcelona							
SIL Assessments & Functional Safety Management	2 Days						6/19-6/20 Barcelona 6/27-6/28 Bilbao				10/2-10/3 Madrid		
Electrostatic Risks in Process Industries	1 Day & 2 Days			3/27 Zaragoza	4/3 Murcia					9/26-9/27 Madrid	10/2-10/3 Barcelona		
Quantified Risk Assessment (QRA)	2 Days				4/17-4/18 Madrid		6/6-6/7 Murcia				10/16-10/17 Barcelona		
Design, Installation and Maintenance of Electrical Equipment in ATEX Zones	2 Days			3/21-3/22 Barcelona	4/11-4/12 Zaragoza 4/17-4/18 A Coruna	5/23-5/24 Murcia	6/19-6/20 Bilbao			9/19-9/20 Valencia	10/16-10/17 Madrid 10/24-10/25 Barcelona		
Design, Installation and Maintenance of Non-Electrical Equipment in ATEX Zones	2 Days		2/22-2/23 Valencia			5/30-5/31 Barcelona							
Installation and Maintenance of Electrical Equipment in ATEX Zones	1 Day					5/16 Barcelona						11/6 Madrid	
Installation and Maintenance of Non-Electrical Equipment in ATEX Zones	1 Day					5/17 Barcelona						11/7 Madrid	
Lessons from Accidents in Process Industries	1 Day					5/17 Barcelona							
Safe Drying of Powders on an Industrial Scale	1 Day						6/12 Madrid 6/27 Barcelona						
Process Safety Management	1 Day				4/25-4/26 Barcelona	5/23-5/24 Madrid							
Chemical Reaction Hazards	1 Day						6/6-6/7 Barcelona						
Design of Emergency Relief Systems	1 Day						6/12 Madrid						