



## Global Experts in Explosion Prevention and Process Safety

Combining specialist process safety management (PSM) and process safety engineering expertise, with generation and use of process safety data allows us to help our clients achieve the most effective and practical approaches to safe and efficient operations and processes, globally.

# Global Experts in Explosion Prevention and Process Safety

## Consulting

We have been a principal provider of specialist services for the prevention and control of fires, explosions, and accidental chemical releases in the chemical and process industries since 1986. We employ a distinguished engineering and scientific staff that includes doctoral-level specialists along with graduate engineers and scientists. Our senior consultants are internationally recognized experts in their fields, and many have served on national and international standards committees.

Through our facilities in North America, Europe, and Asia Pacific, we have been providing our clients with consulting services including:

### Process Safety Engineering

- Dust Flash Fire & Explosion Hazards
- Gas & Vapor Flammability Hazards
- Electrostatic Hazards
- Chemical Reaction and Self-Heating Hazards

### NFPA 652

- Determining combustibility and explosibility hazards
- Conducting Dust Hazard Analysis (DHA) - Identifying and assessing fire, flash fire, and explosion hazards
- Managing identified fire, flash fire, and explosion hazards
  - Prescriptive approach
  - Performance-based alternative designs
- Establishing Safety Management Systems

### Process Safety Management (PSM)

- Program Implementation & Improvement
- Gap Analysis
- Process Hazard Analysis (PHA)
- Quantitative Risk Assessments
- Consequence Modeling
- Layer of Protection Analysis (LOPA)
- Incident Investigations
- Risk Management Plan (RMP)

### New Jersey Toxic Catastrophe Prevention Act (NJTCPA) Programs

#### REACH

- Analysis
- Data collection
- Report preparation
- Report submission to ECHA

### Expert Witness / Litigation Support

### OSHA Combustible Dust National Emphasis Program (NEP)

- Assessment of the combustible dust threat to employees
- Audit of the adequacy of dust management practices
- Audit of the program for ignition source control
- Audit of the design and protection against fire and explosion
- Collection of samples of combustible dusts for laboratory analysis

### OSHA Chemical National Emphasis Program (NEP)

- Conducting a gap analysis of your PSM program to identify areas where your actual PSM implementation practices do not match your written program
- Recommend solutions to outstanding Corrective Actions from previous PHAs, incident investigations, audit findings, and PSM citations.
- Conduct a mock inspection following the NEP protocol and typical questions similar to what could be expected in OSHA's Dynamic List.

## Testing Capabilities

We provide process safety testing services in N. America, Europe, and Asia Pacific regions through our state-of-the-art ISO 17025 and GLP accredited laboratories in Princeton (NJ), Chicago (IL), Forreton (IL), Southampton (UK), and Shanghai (China).

Our range of testing services includes:

- Dust Explosion
- NFPA 652
- OSHA Combustible Dust NEP
- Thermal Stability
- Electrostatic Conductivity, Resistivity, Chargeability, Discharge Incendivity
- Gas & Vapor Flammability
- Chemical Reaction Hazards
- Chemical Process Development & Optimization
- Transportation of Dangerous Goods - Small & Large-Scale Testing & Letters of Recommendation
- Propellants & Explosives Formulation, Analysis, Initiation Sensitivity & Performance Output Testing & Analysis
- UN Transportation - Classification, packaging, labelling (CHIP)
- NONS (notification of new substances)
- REACH
- ATEX (DSEAR)
- SEVESO (COMAH)
- IEC 61508 (IEC 61511)
- Material Safety Data Sheet
- Handling Toxic and Highly Reactive Materials
- Customized & Large-Scale Testing

# Competence Development

The Chilworth Process Safety Academy provides a global platform for consistent education, according to established syllabi, in all core elements of Process Safety

1

## Best Practices in Management of Process Safety

- The Essentials of Managing Process Safety
- Process Safety Information: The Cornerstone of PSM
- Dust Explosions: Theory, Prevention & Protection
- Gas/Vapor Explosions: Theory, Prevention & Protection
- Chemical Reaction Hazards and Thermal Stability of Materials
- Electrostatic Hazards: Assessment and Control of Ignition Risks

2

## Understanding Process Safety Hazards

- Practical Process Hazards Analysis
- Consequence Modeling
- Quantitative Risk Assessment (QRA)
- Facilities Siting Risk Assessment

3

## Hazard Identification and Risk Analysis

- Protection Against Deflagration (Vapors and Powders)
- Classification and Management of Hazardous Areas
- Design of Emergency Relief Systems
- Creating a Mechanical Integrity Program
- Creating a Management of Change Program
- Pre-Startup Safety Reviews (PSSR's)
- Functional Safety Management & SIL Assessments

4

## Safeguards and Layers of Protection

- Efficient Process Safety Management System Auditing
- Process Safety Metrics & Leading Indicators
- Incident Investigation: Methods & Case Studies
- Lessons from Accidents in the Process Industries

# Our International Locations

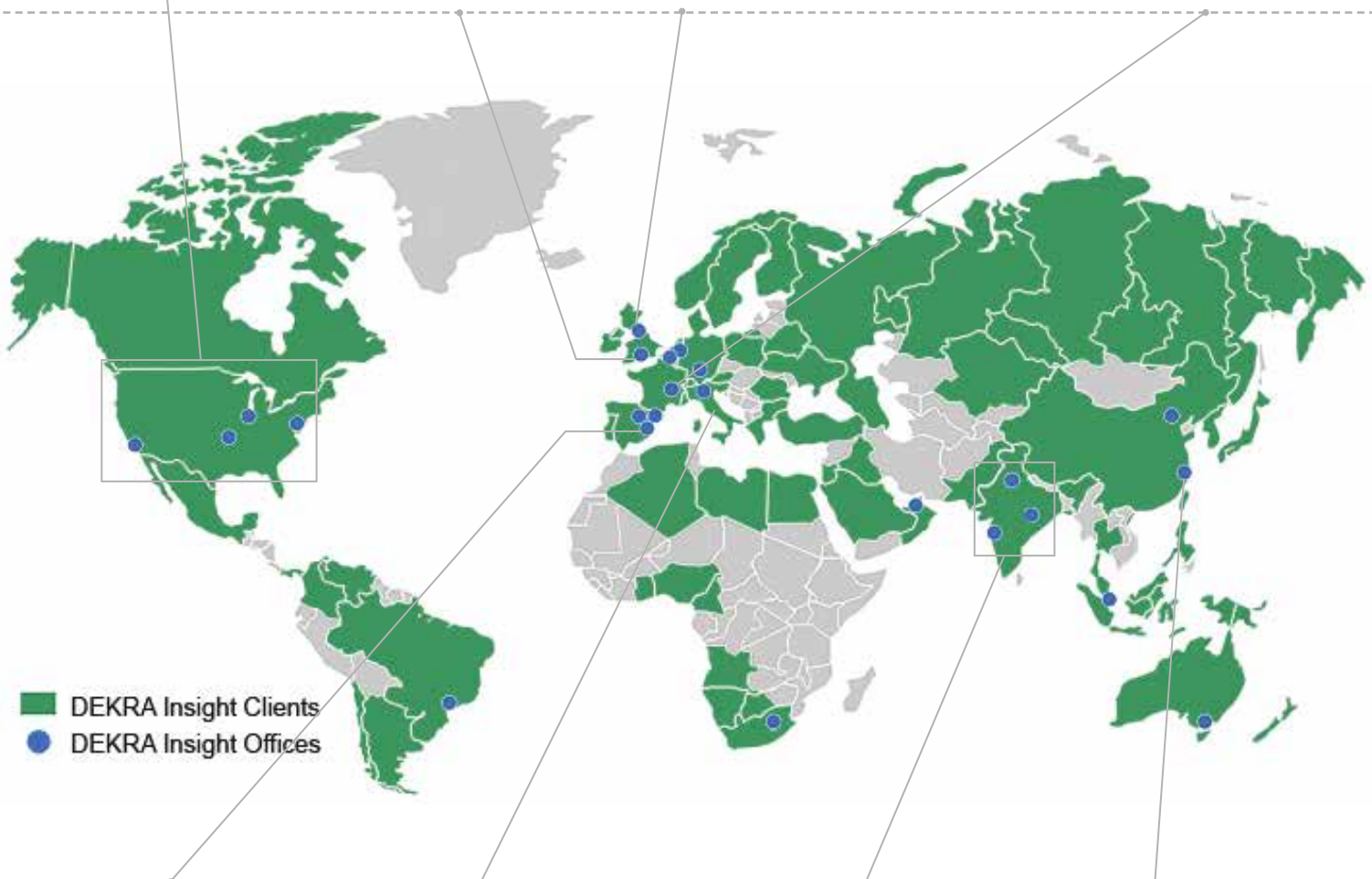
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