Chemical Process Safety and Hazards Management

November 20 – 24, 2017

Overview

Chemical Process Industries (CPI) are critical infrastructure of any country and should be protected from both intentional and unintentional threats. These plants are prone to accidents that may lead to fatalities, loss of property, environmental damage etc., as these handle hazardous chemicals under extreme operating condition. It is important to teach basics of process safety and hazard management to all stakeholders for making these plants safe. This course will discuss all important aspects of chemical process safety including hazards identification, hazard analysis, consequence analysis and emergency response planning. Case studies on Bhopal Gas tragedy and Flixborough disaster will also be discussed to provide practical aspects of accidents to the participants. This course will also provide the recent advancements in the field of process safety and risk assessment. This course has been especially prepared for academician, professionals from industries, executives of government organization, students to learn the important aspects of process safety. The faculty will demonstrate the practical aspects of handling accidents through case studies.

Objectives

The primary objectives of the course are as follows:

- To teach fundamentals of chemical process safety and hazards management
- To discuss the important component of the Risk Management Plan (RMP) i.e. hazards identification, hazard analysis, consequence analysis and emergency response
- To discuss the advancement in the field of risk assessment (both intentional and unintentional threats)
- To demonstrate practical aspects of accidents through case studies
- Use problem solving sessions with examples to estimate Dow's Fire & Explosion Index
- To provide future perspective of inherently safer processes and designs for making safe chemical plants

Topics to be covered

- Concept of loss prevention, accident and loss statistics, fire triangle
- Inherent Safety: process intensification, substitution, moderation
- Industrial Hygiene: evaluation and control, Hazards of common materials, leaks and spills in Oil and Gas facilities
- Designs to prevent Fire & Explosion (Inerting, static electricity, sprinkler system), case study of an accident caused by faulty design
- Fire modelling (Pool Fire and Fire Ball)
- Hazards identification, Hazards and Operability Studies (HAZOP)
- Quantitative Risk Analysis (QRA), Layer of Protection Analysis (LOPA), Fault Tree Analysis (FTA), Even Tree Analysis (ETA)
- Dow's Fire and Explosion Index (F&EI) with example of a storage vessel in a tank farm areas
- Concepts of Security Vulnerability Assessment (SVA), case study of a refinery and fertilizer plant for SVA
- Safety tools for security risk assessment in Oil and Gas facilities
- Case studies on Bhopal Gas Tragedy and Flixborough Disaster
- Problem discussion with examples

Course duration	**November 20-24, 2017 (5 days)**
Who can attend	❖ This program is open to the Faculty and Students (B.Tech/ M.Tech/ Ph.D) from reputed academic and technical Institutes ❖ Professionals working in Industries, consultancy firms and R&D laboratories can also attend the program
Fees Details	The participation fees (excluding lodging and boarding) for taking this course is as follows: Faculty/Scientists/Industry Personnel from abroad — US $500 Student participants from abroad — US $100 Persons working in Industry/ Consultancy Firms — Rs. 5,000/- Faculty (Internal & External)/ Scientists from Research Organizations — Rs. 5,000/- Students — Rs. 1,000/- The above fee includes all instructional materials, computer use for tutorials and assignments, and session refreshments. Limited accommodation is available on payment basis at Institute Guest House (first cum first serve).

The Faculty

Genserik Reniers, a Master of Science in Chemical Engineering, is Full Professor at the Safety and Security Science Group of the Delft University of Technology, in the Netherlands, where he teaches Risk Analysis and Risk Management. At the University of Antwerp in Belgium, he is a Full professor lecturing amongst others in chemistry, organic chemistry, and Technological Risk Management. At the Brussels campus of the KU Leuven, Belgium, he lectures as a Professor, amongst others, in Engineering Risk Management. Furthermore, he is Scientific Director of the Leiden-Delft-Erasmus Centre for Safety and Security in the Netherlands. His main research interests concern the collaboration surrounding safety and security topics and socio-economic optimization within the chemical industry. Amongst many other academic achievements and output, he has published 120+ scientific papers in high-quality academic journals, and has (co-)authored and (co-)edited some 35 books.

Dr. Shailendra Bajpai is currently working as Associate Professor in the Department of Chemical Engineering at Dr. B R Ambedker National Institute of Technology, Jalandhar. He has 19 years of teaching experience involving both graduate and post graduate courses. He has authored five books and more than 50 research publications in International/national journals of repute and conference proceedings. He is Reviewer of many International Journals such as Journal of Loss Prevention in Process Industries (Elsevier), Journal of Hazardous Materials (Elsevier), Journal of Intelligent and Fuzzy Systems, Chemical Engineering Journal, etc. He is Life Member, Indian Institute of Chemical Engineer, Kolkata and honorary secretary of Doaba Regional Centre, IICHE. His Research interests include Waste water treatment, Safety in chemical plants, Membrane separation process, Risk assessment of intentional threats, etc.

Dr. N. K. Srivastava did his B Tech in Leather Technology from Harcourt Butler Technological Institute Kanpur. He did his M Tech in Chemical Engineering from Indian Institute of Technology Roorkee and Ph D in Chemical Engineering from Dr. B. R. Ambedkar National Institute of Technology Jalandhar. He joined the then Dr. B. R. Ambedkar Region Engineering College Jalandhar as Lecturer in the year 1997. Presently, he is working as Associate Professor in the Department of Chemical Engineering at Dr. B. R. Ambedkar National Institute of Technology Jalandhar. His area of interest is Wastewater Treatment, Air Pollution Control and Biofuels. He has published 01 Book Chapter in "Advances in Nanotechnology". He has published 50 Research Papers in various International and National Peer reviewed Journals and conferences.

Dr Ajay Bansal is Associate Professor and Head, in the Department of Chemical Engineering at Dr B R Ambedkar NIT Jalandhar. He received his M Tech from IIT Delhi and later Ph D from Punjab University Chandigarh in 2005. He has over 22 years of teaching and research experience. The research areas of Dr Bansal include Environmental Engineering, Multiphase Reactors and Flow, Rheologically Complex Fluids, Advanced Oxidation Processes and Photocataysis.

One week GIAN course on

Chemical Process Safety and Hazards Management

November 20 –24, 2017

Course Coordinators

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