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## **Chernobyl 40 Years On: Keeping Process Safety Lessons Alive**

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### **ABSTRACT**

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*In 1986, the Chernobyl Unit 4 accident claimed 31 lives directly, with hundreds more affected by radiation exposure, and exposed profound gaps in reactor design, operational safety, and barrier integrity.*

*Forty years after the Chernobyl Unit 4 accident, the lessons from that tragic event remain critically relevant. While technology and regulations have evolved, latent risks — including tunnel vision in the control room, procedural shortcuts, and overconfidence during testing — continue to challenge high-consequence operations.*

*This session examines how operational decisions, design assumptions, and human factors combined to create the Chernobyl accident. Using the event as a case study, attendees will explore how modern HAZOPs (Hazard and Operability Studies), Major Accident Event (MAE) bow-ties, and abnormal operation risk analysis could have highlighted credible risks, identified weak safeguards, and prevented escalation.*

*By reflecting on Chernobyl through the lens of contemporary process safety tools, this presentation reinforces the importance of vigilance, structured risk assessment, and human-centered safety practices — keeping the lessons of the past alive and actionable today.*

### **KEY WORDS**

*Process Safety, Maximum Anticipated Event, HAZOP, Bow-Tie Analysis, Barrier Integrity, Human Factors, Lessons Learned, Operational Decision-Making*

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**BIOGRAPHY**

Nicole Shambrook is a Chartered Chemical Engineer with IChemE and has 19 years' experience leading Process Safety across petroleum refining, ammonia manufacturing, and power generation. She enjoys engaging directly with front-line leaders and operators, translating lessons from incidents into practical actions, and applying practical, holistic Process Safety Management to ensure credible MAEs are known, understood, managed and critical barriers are effective.

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