

## **CCPS RISK ANALYSIS SCREENING TOOL (RAST) 12:30 pm**

*Dr. Bruce Vaughen, CCPS*

RAST is a Hazards Identification and Risk Analysis (HIRA) tool for effectively understanding and managing process safety risks. It was donated by Dow, modified by CCPS for general use, and is available on their web site. The RAST software uses the HIRA approach to help Process Hazards Analysis (PHA) teams evaluate their process safety risks. RAST can be applied to both new and existing processes, including modifications. It is designed to provide both a qualitative and a semi-quantitative risk analysis for hazardous processes based upon the chemicals, reactivity data, equipment type, operating conditions, and facility layout. RAST uses well-established dispersion models for evaluating the characteristics of leaks and for catastrophic releases of hazardous materials. The potential toxic, fire, or explosion impact can be determined using a vulnerability assessment. This tutorial will provide an overview of the RAST software, present a case study using the HIRA approach, and describe both the advantages and limitations for the risk analysis results.

## **USING CALORIMETRY TO UNDERSTAND REACTIVE CHEMICAL HAZARDS 2:15 pm**

*Dr. Steven Horsch, Fellow, Dow Chemical*

Chemical companies build plants and labs to manufacture products at many different scales as well as develop new products. In order to perform chemical reactions safely, at any scale, the amount of energy that is stored in the chemical system, the conditions under which that energy can be released and the rate of release must be well understood. In many cases, the thermodynamic and kinetic information is not readily available and must be obtained experimentally. The data collected must adequately represent the situation being studied and this requires that the measurement science expert be fully versed in the process or experiments being studied. This lecture will focus on the use of ARC, VSP, TSu, DSC and microcalorimetry to collect thermodynamic and kinetic data and apply it to a process.

## **UNIFIED HAZARD ASSESSMENT: BRINGING TOGETHER HAZOP, LOPA, HAZARD REGISTERS, AND BOWTIE DIAGRAMS 4:00 pm**

*Edward M. Marszal, Kenexis*

Process hazards analysis (PHA) studies, especially Hazards and Operability (HAZOP) studies and Layer of Protection Analysis (LOPA) are ubiquitous in the process industries. To maximize the benefit of this investment, management desires to have multiple scenarios rolled up into easier to use hazard registers, and to be able to visualize them with bow-tie diagrams. Unfortunately, the data that is currently contained in most HAZOP and LOPA studies is not structured to allow easy hazard register generation and bow-tie visualization. This presentation discusses the use of standardized data structures and tools that can display (and allow editing of) a single set of data as a HAZOP worksheet, LOPA worksheet, or bow-tie diagram.

## **IMPLEMENTING INHERENT SAFETY 4:45 pm**

*David Moore, AcuTech*

Process safety management (PSM) has been focused primarily on technical and management systems that must be implemented that are essential to managing the risks of catastrophic releases of highly hazardous chemicals. Inherent safety has been recognized as a substantially beneficial approach for process safety since the late 1960's. However, most companies do not have a clearly defined process for focusing on opportunities and ensuring that maximum value is obtained from Inherently Safer Design (ISD). This presentation will explain the development of the new third Edition ISD Guidelines book and the key findings of the research behind the recommended practice AcuTech developed for CCPS, which will be published in 2020.

*Followed by 6:00 pm Poster Session and 7:00 pm Dinner in STEW 218*

**To learn more about the Fall 2019 P2SAC Conference on December 4 & 5, contact:**

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