Course Title: CCPS’ Virtual Process Safety Boot Camp

Virtual Course Schedule on Risked Based Process Safety (RBPS)

Login Times Before Virtual Class Sessions Begin:
- **Session 1**: Login at 9:00 AM Eastern time zone USA for testing connection and 30 minute review of features of virtual classroom controls/features
- **Sessions 2-8**: Login at 9:15 AM Eastern time zone USA to verify or resolve any connection issues.

Virtual Classroom Schedule for Sessions 1 to 8:
- **Session Starting Time**: 9:30 AM Eastern Time USA class each session
- 10 minute break between 10:30 and 11:00 AM Eastern time zone USA
- 30 minute break from ~ noon to 12:30 PM Eastern time zone USA
- 10 minute break between 1:30 and 2 PM Easter time zone USA
- **Session Ending Time**: 2:30 PM Eastern time zone USA class each session

Virtual Course Agenda Topics by Session:

<table>
<thead>
<tr>
<th>Session</th>
<th>Agenda Topics</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Course Overview-Purpose/Objectives/Format/Key Themes</td>
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<tr>
<td></td>
<td>Overview of the RBPS Mgt. System 4 Foundation Stones and 20 Elements</td>
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<td></td>
<td>COMMIT TO PROCESS SAFETY</td>
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<td></td>
<td>Competencies (Element 3): Purpose/Scope/Principles</td>
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<tr>
<td></td>
<td>Basic Process Safety Concepts</td>
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<td></td>
<td>o Primary Loss of Containment (LOC) &amp; Common Causes</td>
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<td></td>
<td>o Possible Knock-on Effects after LOC</td>
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<td>Session 1 Quiz</td>
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Note: Sessions 1 through 5 focus on the first two Foundation Stones of RBPS:
- **COMMIT TO PROCESS SAFETY** (Elements 1-5)—Culture, Compliance with Standards, Competencies, Workforce Involvement & Stakeholder Outreach
- **UNDERSTANDING HAZARDS AND RISK** (Elements 6-7)—Process Knowledge Management & Hazard Identification & Risk Analysis (HIRA)
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| 2 | • Basic Process Safety Concepts (continued)  
  o Incident Sequence  
  o Need for Multiple Layers of Protection & Types of Barriers/Safeguards  
  o Basic Process Control System and Safety Instrumented Systems  
  **UNDERSTAND HAZARDS AND RISK**  
  • Process Knowledge Management Overview (Element 6): Purpose/Scope/Principles  
  • Hazard Identification & Risk Analysis (HIRA) Overview (Element 7):  
    o Basic Risk Concepts  
    o Risk Assessment/Analysis Overview  
    o Risk Matrices and Risk Tolerance Criteria  
  • Basic Process Safety Concepts (continued)  
    o Inherently Safer Design Concepts & Practices  
  Session 2 Quiz |
| 3 | • HIRA (Element 7-continued):  
  o HIRA Methods/Tools for Hazard ID  
  **COMMIT TO PROCESS SAFETY** (continued)  
  • Compliance with Standards (Element 2): Purpose/Scope/Principles  
  **UNDERSTAND HAZARDS AND RISK** (continued)  
  • Basic Process Safety Concepts (completed)  
    o Understand Safeguards for Overpressure / Vacuum Protection  
    o Process Hazard Analysis exercise  
  • HIRA (Element 7-continued)  
    o Design Engineers’ Responsibilities & Use of HIRA Methods Throughout Process Lifecycle  
  Session 3 Quiz |
| 4 | **COMMIT TO PROCESS SAFETY**  
  • Culture (Element 1): Importance & Key Principles  
  **Two Process Safety Culture Moments**  
  • Workforce Involvement (Element 4): Purpose/Scope/Principles  
  **Two Process Safety Culture Moments**  
  • Stakeholder Outreach (Element 5): Purpose/Scope/Principles  
  **UNDERSTAND HAZARDS & RISK** (Elements 6 & 7 continued):  
  • Know Flammability & Combustion Characteristics of Materials  
  **A Process Safety Culture Moment**  
  **UNDERSTAND HAZARDS & RISK** (Elements 6 & 7 continued):  
  • Quantitative Consequence Analysis (focused on fires & explosions)  
  Session 4 Quiz |
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</table>
| 5       | UNDERSTAND HAZARDS & RISK (Elements 6 & 7 continued):  
• Integrated Strategies for Fire / Explosion Prevention & Mitigation  
• Asphyxiant Gas Use Hazards  
A Process Safety Culture Moment  
UNDERSTAND HAZARDS & RISK (Elements 6 & 7 continued):  
• Know Chemical Reactivity Hazards  
• Know Toxicity of Materials  
A Process Safety Culture Moment  
UNDERSTAND HAZARDS & RISK (Elements 6 & 7 continued):  
• Quantitative Probability & Risk Analysis  
Session 5 Quiz |

**Note:** Sessions 6 through 8 focus on Human Factors and the last two Foundation Stones of RBPS:


- **LEARN FROM EXPERIENCE** (Element 17 -20)—Incident Investigation, Measurement & Metrics, Auditing & Management Review & Continuous Improvement

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| 6       | UNDERSTAND HAZARDS AND RISK (Elements 6 & 7 completed):  
• Know Corrosivity of Materials (Also Know Degradation Mechanisms for Non-Metallic Materials!)  
• Human Factors / Human Error  
A Process Safety Culture Moment  
MANAGE RISK  
• Operating Procedures (Element 8): Purpose/Scope/Principles  
• Safe Work Practices (Element 9): Purpose/Scope/Principles  
• Asset Integrity & Reliability (Element 10): Purpose/Scope/Principles  
• Contractor Management (Element 11): Purpose/Scope/Principles  
Session 6 Quiz |
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| 7       | **MANAGE RISK** (continued)  
  - Training & Performance Assurance (Element 12): Purpose/Scope/Principles  
  - Management of Change (Element 13): Purpose/Scope/Principles  
  - Operational Readiness (Element 14): Purpose/Scope/Principles  
  
  **A Process Safety Culture Moment**  
  
  **MANAGE RISK** (continued)  
  - Emergency Management (Element 16): Purpose/Scope/Principles  

| 8       | **LEARN FROM EXPERIENCE** (continued)  
  - Incident Investigation (Element 17): Purpose/Scope/Principles  
  - Session 7 Quiz  

  **A Process Safety Culture Moment**  

  **LEARN FROM EXPERIENCE** (completed)  
  - Audits (Element 19): Purpose/Scope/Principles  
  - Management Review & Continuous Improvement (Element 20): Purpose/Scope/Principles  

  **MANAGE RISK** (completed)  
  - Conduct of Operations (Element 15)  

  **CAPSTONE GROUP EXERCISE**  

  Session 8 Quiz  

  **Course Completion**  
  - Course Closing Comments  
  - Online Course Evaluation by Attendees |