



## 2012 Schedule

April 25-26  
Houston, TX

May 23-24  
Philadelphia, PA

June 13-14  
San Francisco, CA

September 19-20  
Houston, TX

October 23-24  
Philadelphia, PA

November 14-15  
San Francisco, CA

**Course Tuition: \$995**

**Course Length: 2 Days**

**Accreditation: 1.4 CEUs**

Questions?

Email [ati@acutech-consulting.com](mailto:ati@acutech-consulting.com)

## Course Description

Layer of Protection Analysis (LOPA) is a simplified method of risk assessment that provides the much-needed middle ground between a qualitative process hazard analysis (such as a HAZOP or What-If) and a traditional, expensive quantitative risk analysis. Beginning with an identified accident scenario, LOPA uses simplifying rules to evaluate initiating event frequency, independent protective layers, and consequences to provide an order-of-magnitude estimate of risk. LOPA has also proven an excellent approach for determining the safety integrity level necessary for an instrumented safety system, an approach endorsed in instrumented standards, such as ISA S84 and IEC 61511.

The 2-day training class provides complete instruction on how to lead a LOPA study, and how to integrate LOPAs with PHAs. The course includes the main topics from the Center for Chemical Process Safety (CCPS) concept book on Layer of Protection Analysis.

## Course Benefits:

- Learn how and when to use LOPA
- Discover how to develop scenarios from a qualitative hazard study (i.e. HAZOP) or from a new process or change to a process
- Understand how to estimate the frequency category for the initiating event of a scenario
- Learn how to determine the consequence category for the unmitigated scenario
- Understand how to determine which protection layers meet the criteria of independence and uniqueness as independent protection layers (IPLs)
- Develop an understanding of how to determine the risk of a LOPA scenario and how to determine if further risk reduction is warranted
- Learn about industry best practices in LOPA