

Safety and Chemical Engineering Education – History and Results

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Extended Abstract

CCPS started their Safety and Chemical Engineering Education (SACHE) efforts in 1985. The objective of CCPS's SACHE is to help professors add safety to their chemical engineering courses. This added education is needed because large chemical plant accidents continue to increase every year. The consequences are deaths, injuries, and environmental damage, and there is currently no sign that there will be fewer accidents in the future. The causes are the complexity of chemical processes, the aging of our existing plants, and sizes of your newer plants. Our students and engineers must be motivated to prevent these accidents in this complex environment.

The ultimate goal of SACHE (CCPS and Industry) is to create a "safety culture" in our young professionals by adding elements of safety to the undergraduate curriculum. The idea is that if students are exposed to safety in small quantities throughout their education, then it will become a part of their inherent thinking both as students and when working as professionals. This safety culture will help our future professionals be motivated to design, install, and manage safe plants in this challenging environment. Clearly the detailed education on specific process safety topics is the responsibility of industry; however, the effectiveness of this training will be substantially improved when working with a positive safety culture.

This SACHE committee's twenty-three years of hard work is now giving a significant number of students and young engineers an interest and knowledge in chemical process safety. CCPS/SACHE is making progress as shown below:

- **Motivating professors regarding the importance of process safety (annual workshops for professors in a plant environment).** For these workshops, professors only pay for the transportation to and from the host plant. Local transportation, food, lodging, etc. are funded by CCPS and Industry. The workshops are facilitated by experts in the area of chemical process safety. Plant tours are a major part of this experience to highlight the teachings. This is a positive and effective educational experience for

the professors (25 per annual workshop), and a unique opportunity to tour plants with plant specialists.

- **Helping professors add safety to their courses (SACHE develops course materials).** The SACHE products are on-line, making them readily accessible to professors and students. The products include movies and presentations on: a) chemical process safety, b) inherent safety, c) risk assessment, d) static electricity, e) case histories, etc.
- **Motivating students regarding the importance of process safety (AIChE Design Problem Awards and SACHE Safety Certificates).** There are six awards for the AIChE Design Problem Solutions. The awards are SACHE awards (\$200 for an individual and \$300 for a team that includes the best application of the principles of process safety in their design solutions), and the Safety and Health Division Awards (four at \$600 each for the best application of the concepts of inherent safety in their design solutions). SACHE also has safety certificates covering the major topics of process safety. Students are directed to review specific SACHE products and then are required to take a test. Students who pass the test are given certificates – and the certificate awardees are acknowledged via AIChE. The awardees can and should identify the certificates in their resumes, because these awards are and will continue to be especially valued by industry and interviewers.