Mary Kay O'Connor

PROCESS SAFETY CENTER

Making safety second nature.

TEXAS A&M ENGINEERING

TEES
TEXAS ENGINEERING EXPERIMENT STATION

Artie McFerrin Department of
CHEMICAL ENGINEERING

Chemicals play a key role in today's high-tech world. The modern chemical industry is linked to every technologically advanced industry. Only a handful of the goods and services we enjoy on a daily basis would exist without essential chemical products.

Safe use of chemicals creates a healthier economy and a higher standard of living, but unsafe use threatens lives, businesses and ultimately our world.

The Mary Kay O'Connor Process Safety Center was established in 1995 through the generosity of chemical engineer T. Michael O'Connor. His goal, and our mission, are to improve safety in the chemical process industry — to make safety second nature.

To that end, our programs and research activities enhance safety in the process industries. Our educational activities are aimed at making safety second nature to everyone in the industry. In addition, we develop safer processes, equipment, procedures and management strategies to minimize losses.

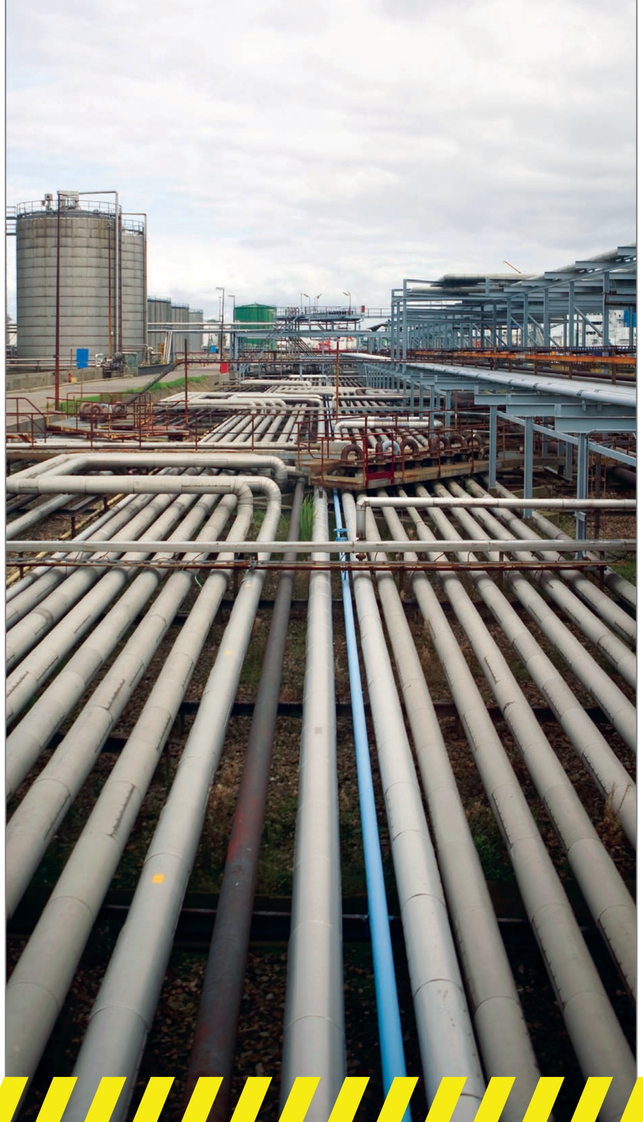
RESEARCH

Center personnel conduct studies pertaining to general issues of process safety as well as specific interests of the center's consortium members. Overall research goals are to develop:

- Systematic identification and evaluation risk, based on severity of consequences and probability of occurrence, to prioritize projects related to certain processes; types of process, storage and transportation systems; and various chemicals
- Projects to most effectively address the risks identified
- Inherently safer process schemes for the most common and most hazardous processes
- Technology and methods to develop engineering design concepts and implement such processes
- Devices, systems and other means for improving safety of chemical operations, storage, transportation and use by prevention or mitigation
- Improved prediction and analysis of behavior of hazardous chemicals and the systems associated with them

Research topics include:

- LNG safety research
- Resilient engineered systems
- Flammability and combustion research
- Reactive chemical research
- Experimental research such as computational analysis and prediction of calorimetric data
- Inherent safety research such as the integration of process safety into process design and optimization
- Risk assessment



RESOURCES

The Reactive Chemicals Laboratory is equipped with two calorimeters for studying thermal behavior of reactive systems. With this experimental capability, we can investigate thermal behavior of wide ranges of reactive systems and systems of questionable chemical compatibility.

The Aerosol Laboratory can be used to study the behavior of fluid aerosols leaking from manufacturing processes.

Additionally, we are linked to tremendous resources throughout The Texas A&M University System, including:

- Texas A&M University experts in chemical engineering, chemistry, industrial psychology and other departments
- The Hazard Reduction and Recovery Center, the largest research center in the world for studying the effects of natural and technological hazards
- The Electrostatic Research Laboratory, an integral part of the safety engineering and industrial hygiene program in Texas A&M's Department of Nuclear Engineering
- The Department of Aerospace Engineering's Low Speed Wind Tunnel, a self-contained research facility capable of conducting a wide variety of tests for industry, governmental agencies, educational institutions and private individuals
- The state-of-the-art Brayton Fire Training Field, which includes full-scale buildings, towers, tanks and industrial plant structures for training simulations for career and volunteer firefighters and fire marshals

SERVICES

The Mary Kay O'Connor Process Safety Center provides a neutral forum to discuss difficult issues related to process safety. Towards that goal, the Chemical Safety Program Assessment Project is a significant effort that brings together a diverse group of stakeholders. Objectives include identifying national chemical safety goals; identifying and implementing activities necessary to accomplish these goals; and establishing a measurement system to help gauge progress toward these goals.

In addition, we serve as an information resource base for process safety, acting as a library and software laboratory. We provide consultation for small and medium enterprises, government agencies, institutions, local emergency planning committees and other agencies. Independent accident analysis services are also available to industry and government agencies, particularly for accidents suggesting new or complex phenomena.

EXPERTISE

Dr. Sam Mannan, center director, is an internationally recognized expert on process safety and risk assessment. Mannan, the T. Michael O'Connor Chair I in the Artie McFerrin Department of Chemical Engineering at Texas A&M University, is a registered professional engineer and certified safety professional. In addition to his many professional honors and achievements, Dr. Mannan has served as a consultant to numerous entities in both the academic and private sectors. He also has testified before the U.S. Congress on multiple occasions, lending his expertise on matters of national security as it relates to chemical safety and infrastructure.

Other center researchers include leaders in the fields of process safety management; liquefied gas safety; ammonia and fertilizer plant safety; refinery and chemical plant safety engineering; and risk assessment for the process industries.

Center personnel are active in technical committees of professional societies such as the American Institute of Chemical Engineers, the American Society of Mechanical Engineers, the American Society of Safety Engineers, the Systems Safety Society and the National Society of Professional Engineers.

In addition, our Steering Committee provides guidance to the operational activities of the center, while the Technical Advisory Committee reviews and refines the research agenda.

MEMBERSHIP

Sponsorship takes many forms, including a variety of consortium membership options and directly sponsored research. The center seeks an interactive relationship with all members to enhance technology transfer. Please see http://process-safety.tamu.edu for more details.

Mission

Lead the integration of process safety — through education, research and service — into learning and practice of all individuals and organizations.

Vision

Serve as the process safety center of excellence that promotes:

- Process safety as a personal value that is second nature for all stakeholders
- Continuous progress toward zero injuries and elimination of adverse impacts on the community

Values

- Health and safety of the community and workforce
- Sharing of knowledge and information
- Sound scholarship and academic freedom
- Diversity of thought and viewpoint
- Independence to practice sound science
- Integrity of science validated by peer review
- Freedom to evaluate and comment on public policy
- Progress without undue influence by special interests
- Individual and group achievement

Dr. Sam Mannan
Mary Kay O'Connor Process Safety Center
Texas A&M University
College Station, TX 77843-3122

Phone: 979.845.3489
Fax: 979.458.1493
Email: mannan@tamu.edu

Visit our web site:
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