

KEY CSB SUCCESSES



U.S. Chemical Safety and Hazard Investigation Board

IN THE CSB'S 19-YEAR HISTORY, the agency has deployed to over **130** chemical incidents and issued more than **800** recommendations that have led to numerous safety improvements across a wide variety of industries. The following examples have resulted in safety change to protect people and the environment.



Improving Workplace Safety for Combustible Dust Hazards

As a result of several CSB investigations and a Combustible Dust Study, the Occupational Safety and Health Administration (OSHA) identified at-risk manufacturing industries and implemented a national Special Emphasis Program (SEP) on combustible dust hazards in general industry. The SEP included an outreach program focused on information from their Safety and Health Information Bulletin, *Combustible Dust in Industry: Preventing and Mitigating the Effects of Fires and Explosions*. [Combustible Dust Hazard Investigation](#)

Improved Training for First Responders

Following the investigation of the explosion of fertilizer grade ammonium nitrate (FGAN) that killed fifteen and injured 260, the CSB recommended that the Federal Emergency Management Agency (FEMA) create a training program on the hazards of FGAN. FEMA awarded two grants of \$1 million each to the Georgia Tech Research Institute and the International Association of Fire Fighters to develop and deliver HAZMAT training, focusing on FGAN hazards. Based on similar recommendations, Texas A&M Engineering Extension Services and the Mary Kay O'Connor Process Safety Center developed comprehensive industrial emergency training programs for first responders. [West Fertilizer Explosion](#)



New Fire Code Protection for the Storage and Use of Hazardous Materials

In response to the CSB's investigation into the fire and explosion that injured 36 people, including members of the public and six fire fighters, the City of New York revised its Fire Prevention Code. This achieved a more comprehensive control over the storage and use of hazardous materials based on the International Code Council's (ICC) International Fire Code and the National Fire Protection Association's (NFPA) Fire Protection Code. [Kaltech Industries Waste Mixing Explosion](#)

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Safer Methods for Cleaning Piping

The ICC revised the International Fire Code and International Fuel Gas Code to prohibit the use of flammable gases to conduct 'gas blows' to clean piping. This change was recommended following the completion of CSB's investigation of an explosion at a natural gas facility that killed six workers. [Kleen Energy Natural Gas Explosion](#)

The CSB's investigation into the major natural gas explosion and subsequent release of ammonia that killed two, critically burned four, and injured 71 resulted in incorporating the revised gas purging provisions of the National Fuel Gas Code into the International Fuel

Gas Code. Simultaneously, NFPA enacted changes to the National Fuel Gas Code to require facilities to purge fuel gases directly outdoors, away from personnel and ignition sources. [Con Agra Natural Gas Explosion](#)

Improving Safety Education

The CSB's investigation into an explosion and fire at a small company that killed four and injured 32, including 28 members of the public, resulted in a recommendation to the Accreditation Board for Engineering and Technology, Inc. (ABET) to work with the American Institute of Chemical Engineers (AIChE) to add reactive hazard awareness to baccalaureate chemical engineering curricula requirements.

AIChE proposed changes, which ABET approved, to require proficiency in not just reactive chemical hazards but in all chemical process hazards among a broad range of engineering disciplines.

[T2 Laboratories Inc. Explosion](#)



The CSB made a recommendation to the American Chemical Society (ACS) to develop guidance to identify, assess, and control hazards in research laboratories after a graduate student was severely injured in a laboratory explosion. ACS published *Identifying and Evaluating Hazards in Research Laboratories* and an accompanying publication on safety culture to provide guidance in educational and research laboratories. [TTU Chemistry Lab Explosion](#)



Corporate Safety Oversight at U.S. Refineries

In the aftermath of the 2005 explosion that killed fifteen workers and injured 180 others, the CSB issued an urgent recommendation to BP to form an independent review panel led by Secretary James A. Baker III to conduct a thorough review of the company's corporate safety culture, safety management systems, and corporate safety oversight at its U.S. refineries. The lessons learned from this report have been shared with refineries across the country to apply in their own facilities to prevent future accidents. [BP Texas City Explosion](#)