

Risk Analysis Studies

EXPLOSION RESEARCH COOPERATIVE



The Explosion Research Cooperative has sponsored several risk analysis studies to characterize the vulnerability of people and equipment to explosions.

For more information regarding the Cooperative's risk analysis studies, please contact:

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ACCOMPLISHMENTS

- Assessed the vulnerability of critical equipment to terrorist attack
- On-going studies to characterize the response of process equipment to blast loads
- Created a tool to predict occupant vulnerability as a function of building damage in a joint Explosion Research Cooperative/ U.S. government program
- Provided guidelines for facility design to minimize explosion hazards

A Joint Industry Research Program
by BakerRisk

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PREVIOUS STUDIES:

Vulnerability of Process Equipment and Storage Facilities to Terrorist Attack (2003). The objective of the study was to develop vulnerability curves for various types of critical plant equipment subjected to attack from typical terrorist weapons. The study allowed for realistic assessment of potential equipment damage resulting from terrorist scenarios, which is useful in Vulnerability Assessment Modeling.

Survey of Facility Siting Practices and Experience (2000) Cooperative Participants had the opportunity to share information and experience concerning the performance of facility siting studies and the implementation of remediation measures from these evaluations.

Facility Engineering Design Practices to Mitigate Explosion Hazards (2000) A set of process plant layout guidelines were developed for new and upgraded facilities. The intended audience for this tutorial is project engineers who are not acquainted with loss prevention engineering or explosion consequences. These guidelines promote inherently safer designs that lead to reductions in blast pressures should a VCE occur.

Response of Process Equipment to Blast Loads (2000) This study focused on the prediction of process equipment damage from accidental explosions. Existing equipment damage prediction methods were evaluated and compared to damage data from available references, case histories, and published reports of actual VCE incidents causing equipment damage. A large quantity of equipment damage data became available through an investigation of a recent large vapor cloud explosion.

Building Occupant Vulnerability Assessment (1999) The purpose of this study was to collect information on injuries from accidental explosions at plants of the Cooperative participating companies and organize this information so that it could be used in a project to develop a building occupant vulnerability model for the U.S. Government. In return, the Cooperative obtained rights to use the vulnerability model developed for the Government. The vulnerability model predicts the percentage of occupants that will sustain given injury levels in buildings subjected to blast pressures based on the predicted building damage. The building damage must be predicted with another methodology, such as the BEAST methodology developed for the 1995 Cooperative. The building damage and general information on the construction of the building must be input into the vulnerability model.



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For additional information on participating in the Explosion Research Cooperative, visit www.BakerRisk.com or email us at Co-op@BakerRisk.com