



QUANTITATIVE RISK ASSESSMENT

Knowing the hazards from a chemical process is only the first step in a comprehensive safety plan. Evaluating risk is a proven way to manage these hazards in an objective manner. Quantitative Risk Assessments (QRAs) evaluate both the likelihood and impact of an unplanned event and allow business decisions to be made on the most cost-effective risk reduction solutions, where necessary. Effectively managing risk results in cost savings by reducing business interruption and limiting injury to people and damage to equipment.

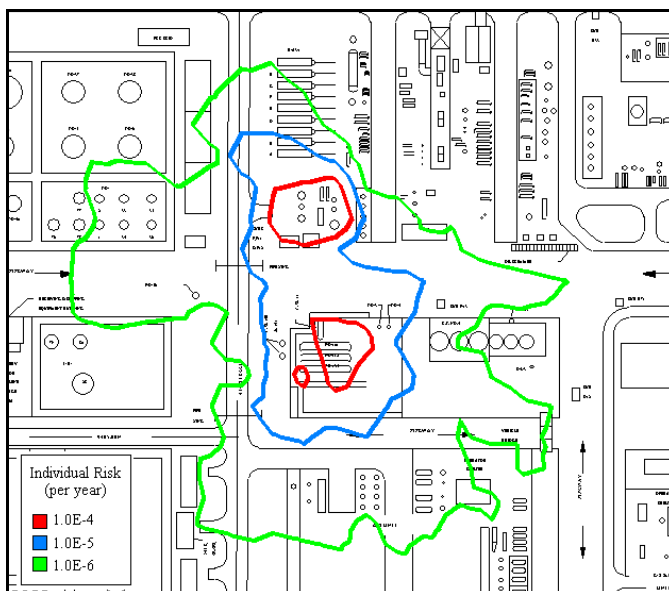
Baker Engineering and Risk Consultants, Inc. (BakerRisk) engineers have performed QRA studies worldwide, evaluating risks to the business (property, business interruption, market share), to people, and to the environment.

Facilities evaluated include refineries, terminals, gas plants, LNG and LPG operations, pipeline systems, offshore platforms, FPSOs, oil and gas wells, and chemical, petrochemical and pharmaceutical plants.

QRA studies have been conducted during conceptual design reviews, for front-end engineering design, for detailed engineering, and for existing operating facilities.



LNG Plant Under Construction



Individual Risk Contour Map

BakerRisk uses a phased approach to QRA, which ensures that hazards are identified, relevant consequences (fires, toxic releases and explosions) are modeled, and those events with the potential to cause harm or damage are analyzed to estimate their frequencies and associated risk.

Early in the life of a QRA project, BakerRisk establishes a close working relationship with the client and jointly we set clear objectives and goals. This ensures a clear path forward to developing a work product that is accurate, timely and provides the data necessary for clients to make informed business decisions.



BAKER ENGINEERING AND RISK CONSULTANTS, INC.

Headquarters

3330 Oakwell Court, Suite 100
San Antonio, TX 78218-3024
210.824.5960 tel
210.824.5964 fax

Houston Office

4100 Greenbriar, Suite 130
Stafford, TX 77477-3908
281.491.3881 tel
281.491.3882 fax

About BakerRisk

Baker Engineering and Risk Consultants, Inc. is one of the world's leading explosion analysis, structural design, and risk engineering companies. BakerRisk provides comprehensive consulting, engineering, laboratory and range testing services to government agencies and private companies who are involved with dangerous, highly hazardous, reactive, or explosive materials.



Blast Effects & Explosion Testing



Dynamic Structural Analysis
and Design



Risk Engineering



Process Safety



Incident Investigations

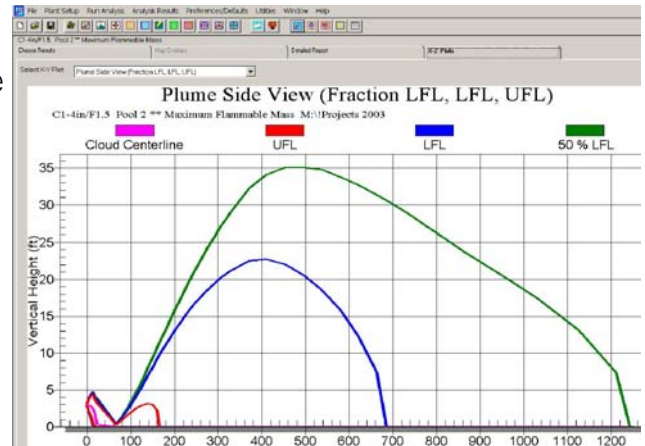


Reactive Chemicals Testing &
Management Systems

www.BakerRisk.com

BakerRisk provides a comprehensive range of specialty services in support of our clients' risk management programs:

- **Hazard Identification:** Utilizing experience gained from investigating hundreds of accidents around the world, BakerRisk personnel conduct high quality hazard identification studies utilizing techniques such as HAZOP, What-If, FMEA, FTA, ETA.
- **Consequence Analysis:** The hazard zones from the fires, explosions and toxic releases associated with a potential event are calculated.
- **Frequency Estimation:** A variety of approaches are used to determine the frequency of undesirable events, including using historical incident databases, client-specific data and predictive techniques.
- **Risk Assessment:** Combining the consequences and frequency of an event, allows the impact on asset losses, business interruption, and/or injuries to personnel to be assessed.
- **Risk Mitigation:** The benefits of different risk mitigation measures can be compared, quantified in financial terms and used to make cost effective and practical decisions.



Vapor Cloud Profile from SafeSite_{3G}TM

A BakerRisk QRA is supported by the following unique technologies and activities:

- **Software:** BakerRisk's SafeSite_{3G}TM is an integrated consequence assessment tool for modeling the impact of accidental releases and explosions.
- **Test Facilities:** BakerRisk's field testing facilities are used to continually validate and improve the technology that we use in our projects, and provide a means for clients to conduct experiments to address their specific concerns.
- **Industry Cooperative:** BakerRisk's R&D programs and software development are sponsored by an industry consortium of the major chemical and petroleum companies.