

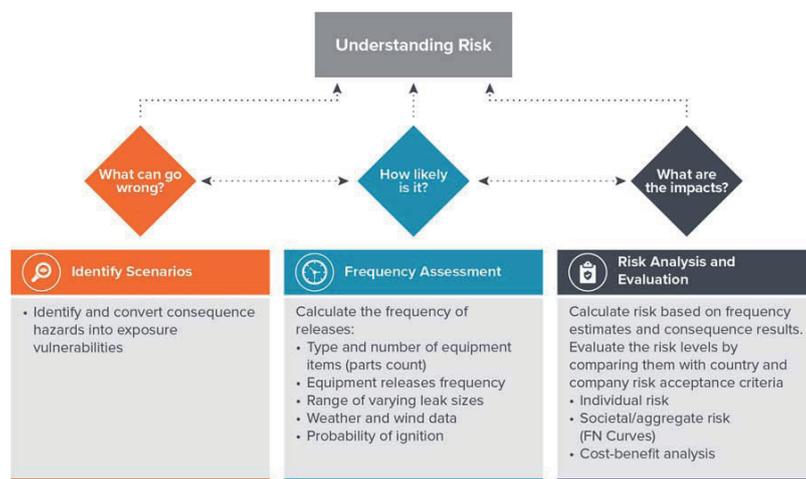
Occupied building risk assessments: risk-based solutions and benefits

There are many approaches to Occupied Building Risk Assessments (OBRA) which ultimately fall under two categories: Consequence or Risk-based. A risk-based approach to facility siting, which considers the frequency of scenarios, can provide the greatest understanding of on-site risks, and enables the most cost-effective resolution of facility siting issues.

What is a Quantitative Risk Assessment?

A Quantitative Risk Assessment (QRA) is a systematic approach to calculating risk. It provides a clear, quantifiable understanding of potential risk exposure to personnel, assets, the environment, and your business. In addition, a QRA evaluates the validity of quantitative results by identifying critical assumptions and risk-driving elements. A QRA involves predicting the consequences of a hazard and the frequency at which the threat may occur. These aspects are then combined to obtain numerical values for fatality risk.

QRA studies are invaluable for production and processing facilities, high-pressure pipelines and storage and importation sites, including Liquefied Natural Gas (LNG). Utilizing a risk-based approach for facility siting improves decision-making by highlighting scenarios that contribute most to your overall risk. This approach ensures you meet acceptable individual, operational and environmental criteria demonstrating that risk is As Low As Reasonably Practicable (ALARP).



Implementing QRA: Going Beyond Software

When it comes to conducting QRAs, there are various commercial and private software tools. While these tools can identify hazards, quantify exposure, and calculate risk, this is often where their capabilities stop, resulting in an unclear path forward. While you may better understand your hazard risk, the question of what to do next is not always apparent.

A QRA is not just about having a software tool and running complex multivariate analysis. You need practical experience in deriving points of action from the QRA so that you can properly manage your operational risk. The QRA process

should identify the hazard source so you can develop emergency response plans, adjust occupancy retrofit structures, locate new permanent and temporary buildings, and install automated detection systems.

The Benefits of QRA

Controlling Risk Sources

One large benefit of a QRA is that it identifies the controlling risk sources. Since scenarios are developed across the process, risk results are ranked by scenario to indicate which processes provide the highest risk and are good candidates for risk reduction via process controls and hazard mitigation.

Building Occupancy

Building occupancy has a direct impact on calculated risks. The most hours worked by any individual determines the time fraction used for individual risks. Therefore, reducing the time spent in the building directly reduces the individual risk. Over a week, the total number of people in the building impacts the aggregate risk. QRA requires a company to have quantitative risk criteria for individual and aggregate risk. Quantitative criteria development requires understanding the different risk criteria, the best practices for developing the criteria and the industry risk criteria precedents.

Interpreting the risk results when compared to the criteria is often a point of confusion. Individual risk is straightforward since most companies define a maximum criteria value above which risk reduction is required. Aggregate risk illustrated as FN curves are more complex, consisting of an intolerable upper region, an ALARP middle region and a broadly acceptable lower region.

Companies must also decide how current to keep their risk studies. COMAH defines a 5-year revalidation cycle in the UK. It is not reasonable or practical to update the QRA for every process change; however, some level of risk impact should be performed for significant process unit changes or the addition of new occupied buildings.

How Can we help?

ABS Group is uniquely positioned based on experience to provide clients with OBRAs using risk-based methods. Risk-based OBRAs offer a more rigorous study of potential significant accident hazards. Working with industry experts like us provides easy solutions to the complex

issues surrounding QRAs.

Evaluating impacts and doing cost-benefit are usually the limits for most consultants. We offer a solution-focused approach, with the QRA being the starting point in the journey toward safer operations. Risk ranking and prioritization, mitigation planning, cost-benefit studies, design, and implementation planning, allow us to provide a turnkey solution for the facility siting lifecycle.

Dan Humphreys, ABS Group
enquiriesuk@abs-group.com