

PROACT with QRA



Quantitative Risk Assessment (QRA) is a probabilistic methodology for estimating the risk posed by a given system in terms of human loss.

The first step includes the calculation of frequencies of major accident scenarios based on event tree analysis, taking into account specific prevention and protection measures implemented by each facility. Then, individual risk contours are drawn on facility layout and maps of the area, incorporating both major accidents frequencies and consequences, using the internationally recognised RISKCURVES software by Gexcon and TNO in order to obtain a plant-specific “risk profile”

Why QRA?

- Identify **major risk areas** and implement risk-based inspection plan and customized training
- Quantify the **contribution** of different repression systems and human intervention to overall risk reduction
- Decide upon different modification and expansion **alternatives** based on their potential risk contribution
- Add together credible accident scenarios to see an “**overall risk picture**”, customized to depict the specific features of each facility

PROACT with CoMo



Consequence Modelling (CoMo)

Major accidents often have catastrophic impact on human life, the environment, company's assets and reputation. In order to mitigate the consequences of such accidents thereby achieving an optimum safety level throughout the facility, it is important to fully understand the nature of hazards with the use of specialized software.

ProAct's engineers have extensive experience in identifying credible major accident scenarios and depicting the hazard radii of BLEVEs, VCEs, pool fires, jet fires, flammable and toxic gas releases using the internationally recognised EFFECTS software by Gexcon and TNO.

Why Consequence Modelling?

- Determine the extent of major accident consequences and update the **emergency plan** accordingly to include necessary actions and major risk areas
- Make informed decisions about **equipment siting** in new facilities in order to avoid domino effects and, if possible, limit the consequences in only certain areas
- Choose the most cost-effective **technical solution** comparing the magnitude of consequence mitigation that each alternative can offer
- Comply with the provisions of **SEVESO III** Directive (2012/18/EU) either for lower-tier or upper-tier establishments

Why OBRA?

- Implement **pragmatic and cost-effective** solutions to adequately protect occupants against explosion, fire and toxic material releases
- Revise **emergency response** procedures and determine necessary personal protective equipment
- Manage the **occupancy and use of buildings** as an integral part of the design, construction, maintenance, and operation of a facility
- Demonstrate **compliance** with latest standards and good practice guidance such as CCPS, CIA, API RP 752 and 753.

Occupied buildings such as control rooms are often inevitably located close to process areas to facilitate coordination and communications. The location of occupied temporary and permanent buildings is of paramount importance as it directly affects the safety of employees and contractors in case of an accident involving the release of hazardous substances.

In this context, an **Occupied Building Risk Assessment (OBRA)** that evaluates building siting in terms of blast load, thermal flux, flammable and toxic gas concentration, occupant vulnerability, damage and internal environment degradation can effectively help manage risks and reduce consequences.

PROACT

with QRA
CoMo &
OBRA



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