Analysis in the correct basis is the first step for effective major accident hazards protection and prevention, as we cannot protect ourselves from what we do not understand.

There are many different methods to identify and analyse major accident hazards, that can be applied throughout the lifecycle of a facility. All of them are powerful tools that help understand hazards, their likelihood of occurrence and all the necessary actions, that need to be made, in order to prevent and mitigate consequences.

Risk analysis at the design stage of a new installation or before a major change to an existing one is very important as it helps to avoid delayed corrective actions, which unexpectedly increase the cost of an investment.

Consequence modelling

Using the EFFECTS software of the Netherlands Organisation for Applied Scientific Research, consequences of major accidents are visualised and presented as thermal dose, toxic dose and overpressure contours and at the same time the potential on-site and off-site impact of catastrophic and major releases are analysed against the location of the hazard. In this way:

- The emergency plans can be updated to include the areas, where lethal effects and serious injuries are expected due to the realisation of worst case scenarios.

- Educated choice can be made regarding the siting of equipment and facilities in order to avoid domino effects and, if possible, maintain integrity and operability after a major accident.
Quantitative Risk Assessment (QRA)

This probabilistic approach generates individual risk contours on updated maps of the area, that demonstrate the risk to employees working in the facility and to people living in the local area. Starting with an event tree analysis and attributing frequencies and probabilities to initiating events and scenarios, it is possible to:

- quantify and compare how existing measures and various blocking systems contribute to risk reduction
- make decisions for future improvements, modifications and expansions depending on how much these affect individual risk
- identify major risk installations within a facility and compare their risk levels in order to implement proactive a risk based inspection regime

Occupied Building Risk Assessment

Several major accidents worldwide have highlighted the dangers posed to people located within occupied buildings, i.e. buildings designed to provide workspace or accommodation for personnel. By calculating and modelling blast overpressure, thermal radiation and toxic and flammable gas infiltration, suggestions can be made, that do not hinder operations and at the same time ensure the ongoing safety of occupants. These suggestions include:

- Cost effective and practical solutions for improvements on building design
- Temporary building relocation
- Managing residual risk by proper emergency response procedures

Why Ergonomia

Ergonomia has a long and extensive experience in the field of major accident hazards having conducted a series of studies for different industry sectors, including oil & gas, chemical, cement and food industry in many countries.

These studies have been evaluated and accepted by the relevant departments of corporations as well as by public authorities. The experienced engineers of Ergonomia have been trained to use specialized software both for the “probabilistic” (RISKCURVES) and for the “deterministic” (EFFECTS) approach to major accident scenarios involving dangerous substances, in order to successfully identify all relevant risks and measures to reduce them.