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## Insurance Risk Engineering (IRE) Reports

*Following a site survey, BakerRisk prepares a comprehensive Risk Analysis Report that typically includes the sections below. Depending on the project work scope, we work with your team to tailor these sections to suit your specific project requirements.*

### ***Introduction:***

Details the scope of the project, insurance considered, and a list of people involved in the survey, including plant personnel interviewed by the visiting BakerRisk consultant(s).

### ***Summary:***

Provides an overview of the main issues, an overall opinion of the risk, Replacement Cost Value, and EML summaries. BakerRisk's method of assessing the overall risk (from an insurance perspective) of a plant is accomplished through qualitative evaluations of the following key plant criteria:

- Natural Hazards/Perils
- Plant/Process Hazards & Controls
- Loss Prevention/Fire Protection
- Inherent Safe Plant Design
- Process Safety Management

Based on this assessment, a plant rating of “Good”, “Above Average”, “Average”, “Below Average”, or “Poor” will be assigned and explained upon delivery of the report.

### ***General Information:***

Details on the Company Background, Site Location, Consideration of Major Hazards/Perils, and Loss History are provided in this section.

### ***Risk Improvement Recommendations:***

Risk improvement recommendations are provided with the goal of improving loss prevention measures at the plant. A full written description of each potential area for improvement and suggested corrective action will be provided in the survey report, prioritized and categorized according to principles agreed upon by you prior to the survey.

A suggested method for prioritizing/categorizing recommendations, which BakerRisk has used for other clients, is to arrange recommendations in descending order of importance within three categories:

- Category I: Major Deficiencies
- Category II: Medium Deficiencies
- Category III: Minor Deficiencies

# Example BakerRisk Insurance Risk Analysis

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## *Values and Loss Estimates:*

Information pertaining to Property Values, Fire and Explosion Estimated Maximum Loss, Machinery Breakdown, and Summary of Loss Estimates is summarized.

BakerRisk's proprietary loss estimate model (MaxLoss<sup>®</sup>) is used to determine Estimated Maximum Loss (EML) based on the International Oil Insurer's (IOI) EML definition. The MaxLoss<sup>®</sup> program calculates the vapor, liquid or two phase (vapor/liquid) choked flow from an orifice and determines the quantity of vapor liberated from: (a) flashing liquid during the release, (b) entrained droplets, and/or (c) a spreading liquid pool. Based on the thermodynamic properties of the material released, the process conditions, the amount of liquid that is carried into the cloud as an aerosol or mist, the downwind dispersion of the release, the estimated ignition source strength and the degree of confinement and obstacle density in the release area (factors influencing the explosion efficiency), the program then calculates the extent of damage within a defined area. The MaxLoss<sup>®</sup> program is then used to calculate and plot the damageability circles and associated estimate of loss for a variety of postulated scenarios.

Per industry practice, the TNT equivalency method will be used in the analysis. Damageability is calculated for both the "static" condition (i.e., the cloud ignites as soon as it is formed) and the "drifted" condition (i.e., prior to ignition, the cloud is allowed to drift within certain limitations until values within the damage area are maximized). The results of both the static and drifted vapor cloud estimates will be considered, but only the largest loss results are presented.

## *Site Facilities:*

Information pertaining to Process Description, Control Systems, Storage and Loading, Layout and Construction, Utilities, and Projects is provided.

## *Management:*

Information pertaining to Organization, Manpower, Operations, Experience and Training, Safe Work Practices, Maintenance, Inspection, Fire/Safety/PSM, and Security is provided.

## *Plant Protection Facilities:*

Information pertaining to Fire-fighting Facilities, Fireproofing, Fire and Gas Detection, and Emergency Shutdown Systems is provided.