

# RISKCURVES

## COMPREHENSIVE QUANTITATIVE RISK ANALYSIS



**TNO** innovation  
for life

The storage and transport of hazardous materials imposes risks to the surrounding population and structures, both in the urban environment and at (petro-) chemical facilities. RISKCURVES can quantify these risks and easily identify the highest risk scenarios. It can be used for evaluation of high-risk activities, urban planning and to comply with regulatory and corporate criteria.

### QUANTITATIVE RISK ANALYSIS

While Consequence Analysis calculates the physical effects of a single accident with a dangerous substance, a Quantitative Risk Analysis (QRA) takes multiple accident scenarios and many different pieces of equipment into account and quantifies the total risk they pose to human life and vital assets.

Calculated risks are expressed in terms of individual, societal and consequence risk. The latter allows the definition of any type of risk to both human health and structures.

### COMPREHENSIVE PRESENTATION OF RESULTS

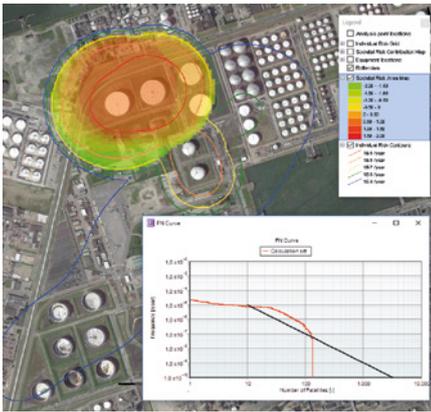
RISKCURVES presents calculation results in a range of ways, from the physical effects of the individual scenarios, to the resulting iso-risk curves, FN curves for societal risks and risk ranking reports.

The software's highly flexible method allows you to accumulate any part of the calculation results and compare it to any other part. To further analyse the results, RISKCURVES offers 'analysis points' to inspect risk contribution of scenarios in specific geographic locations.

### A COMPLETE AND OPEN QRA SUITE

Although consequence modelling based on EFFECTS models is fully integrated, RISKCURVES allows you to use consequence results calculated by other software, offering an open and flexible QRA environment.

RISKCURVES comes with an extensive database of over 2200 chemical components based on the latest DIPPR® data. What's more, it allows you to define customised chemicals and mixtures, specific to your own organisation.



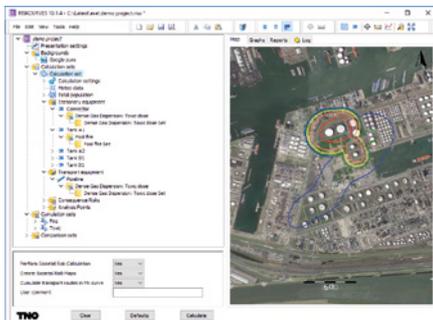
Show societal risk as FN-curve and on the map

### SOCIETAL RISK MAPS

One of RISKCURVES' unique functionalities is the 'societal risk map': a geographical representation of societal risk. This provides insight at a glance, even for non-specialists. Societal risk maps are offered as an additional representation, and accompany the commonly known FN curves. They add the possibility to locate the area(s) that cause societal risk parameters to be exceeded, and to identify the areas that contribute most to risk.

### TRANSPARENCY AND TRACEABILITY

As an independent research organisation, TNO stands for transparent and traceable methods to perform Safety Analysis. For Consequence Analysis, the 'Yellow Book'<sup>1</sup> provides solid scientific information on the models used to calculate the physical effects due to an unwanted release of hazardous chemicals. The 'Purple Book'<sup>2</sup> provides important guidelines for a QRA procedure. These guidelines are the basis for RISKCURVES, resulting in an internationally accepted, coherent and consistent QRA calculation tool.



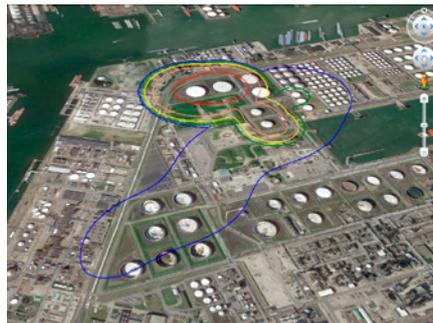
Clear and easy to use interface

### EASY TO USE AND SHARE

RISKCURVES offers the full functionality to do a complete QRA, yet was designed to have a short learning curve for the input phase, the analysis and the presentation of the results. Its user interface allows projects to be defined quickly and was designed to be suitable for both experts and occasional users.

All results are presented in graphs, reports, tables and the integrated GIS environment. Use your own maps, drawings or aerial photography, or take advantage of links to images from OpenStreetMap®, Esri®, Google® Maps and more.

To make RISKCURVES' reports as valuable and effective as possible, the system allows seamless integration with Microsoft Office™, Google Earth® and dedicated GIS software, so you can quickly create professional presentations.



Share results via Google Earth®

### EXPERIENCE YOU CAN TRUST

With RISKCURVES, you can ensure complete, accurate and effective risk analysis. Want to know more? Download a free demo version at [tno.nl/RISKCURVES](http://tno.nl/RISKCURVES).

The 'Coloured Books' are also available for download at [tno.nl/COLOUREDBOOKS](http://tno.nl/COLOUREDBOOKS).

1. *Methods for the calculation of Physical Effects (The 'Yellow Book')*, Committee for the Prevention of Disasters, CPR 14E/PGS2, 2nd rev. print, (2005)
2. *Guidelines for quantitative risk assessment (The 'Purple Book')*, National Institute of Public Health and the Environment (RIVM), CPR 18E, 1st edition (1999/2005)

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### [www.tno.nl/RISKCURVES](http://www.tno.nl/RISKCURVES)

For more information and a demo version of RISKCURVES, please visit our website.

TNO  
Princetonlaan 6  
PO Box 80015  
3508 TA Utrecht  
The Netherlands

T +31 88 866 21 11  
F +31 88 866 20 50  
E [info.effects@tno.nl](mailto:info.effects@tno.nl)