

EFFECTS

ADVANCED, EASY-TO-USE CONSEQUENCE ANALYSIS



TNO innovation
for life

Efficiently calculate the effects and consequences of accidental release of hazardous material using sophisticated, but easy-to-use software. TNO combines transparent, traceable and internationally recognised scientific simulations with a user-friendly and flexible interface.

DESIGNED FOR SAFETY PROFESSIONALS

Analysing and preparing for the consequences of the accidental release of flammable and/or toxic chemicals requires precision and the highest safety standards. EFFECTS is an advanced software tool that allows you to model the behaviour of toxic and/or flammable gases, liquefied gases and liquids.

From the moment of release to the resulting physical effects after-the-fact, EFFECTS calculates heat radiation from fire, over-pressures from explosions, toxic concentrations and doses due to dispersion, and much more. Of course, you can also calculate the consequence to human life (lethality) and structure damage.

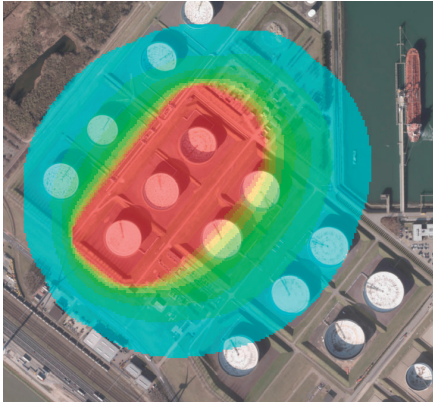
COMPREHENSIVE AND SCALABLE

EFFECTS models the effect of a scenario

on a specific (3D) area: either a 'congestion area' for detailed VCE calculations, or a 'vulnerable area' to calculate physical damage and lethality. With the latest version of the DIPPR chemical database, EFFECTS contains more than 2200 known chemical components. What's more, it allows you to define customised chemicals and mixtures, specific to your own organisation.

INSIGHT INTO EVERY SCENARIO

With more than 70 models, EFFECTS simulates a wide variety of scenarios: from leaks and ruptures in pipelines, pressure valves, vessels and storage tanks, to confined gas explosions, BLEVEs, drifting toxic clouds and jet-, pool-, rim-, bund-, or rooftop fires, just to name a few. You can examine models individually, or link them together for a complete picture of a loss-of-containment scenario.



Advanced modelling includes rectangular pool fires.

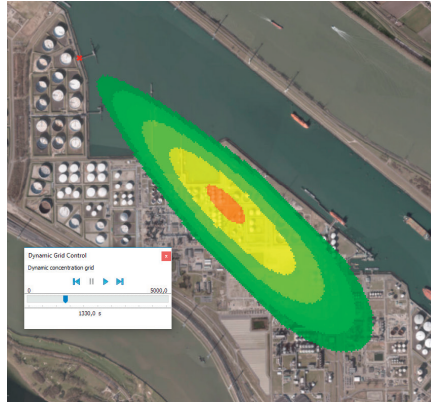
SIMPLE SOLUTIONS

Frequent users of EFFECTS will enjoy the level of control and customisability that EFFECTS can bring. But for new or occasional users, EFFECTS offers a simple alternative. Using 'Combined Models', you simply describe the environment and chemicals present, and EFFECTS automatically analyses and calculates every possible effect of a loss-of-containment scenario that might take place. With just a few mouse clicks, occasional users can get accurate and reliable results.

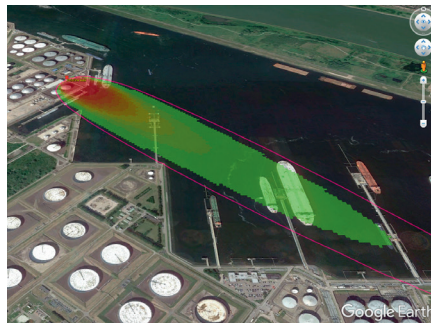
RESULTS YOU CAN SHARE

All results calculated in EFFECTS are presented in graphs, reports, tables and the integrated GIS environment. It also shows contours, grids and the dynamic behaviour of dispersing gases in easy-to-read displays. Use your own maps, drawings or aerial photography, or take advantage of EFFECTS' links to images from OpenStreetMap®, Esri®, Google® Maps and more.

To make EFFECTS' reports as valuable and effective as possible, the system allows seamless integration with Microsoft Office™, Google Earth® and dedicated GIS software, so you can drag and drop images, copy/paste reports, and create professional presentations in just minutes.



Dynamic display of toxic and flammable releases.



Easily share results via Google Earth®.

TRANSPARENCY AND TRACEABILITY

As an independent research organisation, TNO applies transparent and traceable methods for safety analysis. The 'Yellow Book'¹ provides solid, scientific information, and is internationally recognised as the standard reference work for consequence analysis. The 'Green Book'² describes the relationship between physical phenomena (heat radiation, explosion over-pressure, toxic doses) and the resulting damage. Models in EFFECTS are described in detail in these books.

EXPERIENCE YOU CAN RELY ON

TNO is a valued and respected authority on safety and consequence analysis. With EFFECTS, you can ensure complete, accurate and effective analysis in any scenario. Want to know more? Download a free demo version at tno.nl/EFFECTS.

The 'Coloured Books' are also available for download at 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. *Methods for determination of possible damage* (The 'Green Book'), Committee for the Prevention of Disasters, CPR 18E/PGS1, 2nd edition (2005)

TNO.NL

www.tno.nl/EFFECTS

EFFECTS is designed for all those concerned with safety processing, handling and storing hazardous materials.

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