

Safeti

Phast Risk – For Occupied Buildings and Land Use Planning

Extension providing improved building risk assessment capabilities

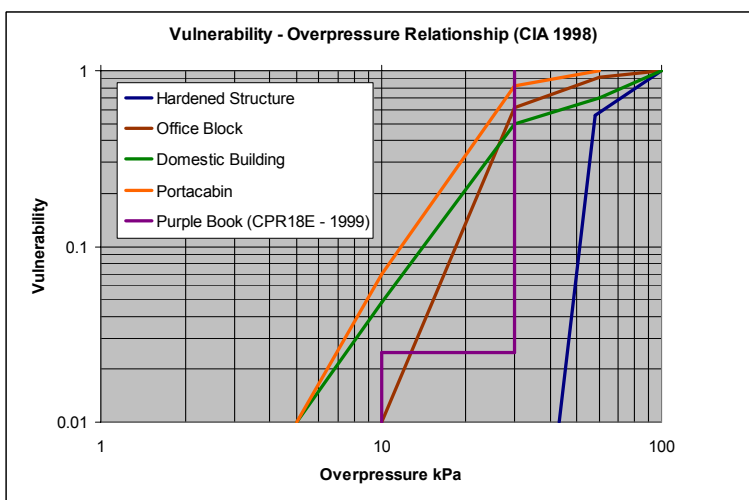
The latest addition to the Phast Risk application suite provides robust, accurate and flexible capabilities for managing risks to people located in process plant buildings. With extended features for modelling of vulnerability, this extension will meet all your needs for occupied building analysis and land use planning for your hazardous facilities.

Over the last 30 years there have been many accidents, such as Buncefield and Texas City, which have resulted in significant damage to process plant buildings. These and similar incidents have resulted in loss of life, damage to property and the environment. This has driven regulation for occupied building risk assessment and land use planning. The new Phast Risk software module for occupied buildings and land use planning

helps you meet the needs of regulations like COMAH, Bevi and the API guidelines for siting of occupied buildings. It provides extensive additional features for creating libraries of building types, each offering specific levels of protection to occupants from the effects of explosions, fires and toxic releases. These can then be included in your QRA allowing accurate assessment of risks to building occupants.

Benefits

- Create your own building type libraries for effective occupied building analysis
- Easy and intuitive definition of buildings and their occupants on a GIS map
- Powerful graphing and reporting including
Exceedance curves for building risk assesment
Exceedance contours for land use planning
Drill-down reporting to identify key risk drivers



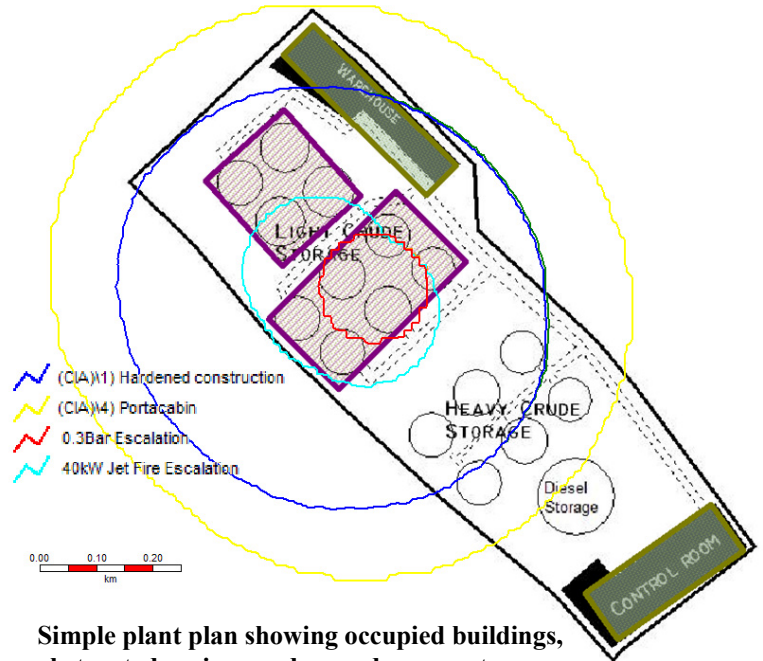
Key Features

- Ability to create library of building types
- Define vulnerability for each building type in terms of probability of death for given effect level for overpressure, radiation and toxicity
- Place buildings graphically on GIS map
- Use building type library to generate exceedance contours on map
- Use individual buildings to generate building specific overpressure exceedance curves

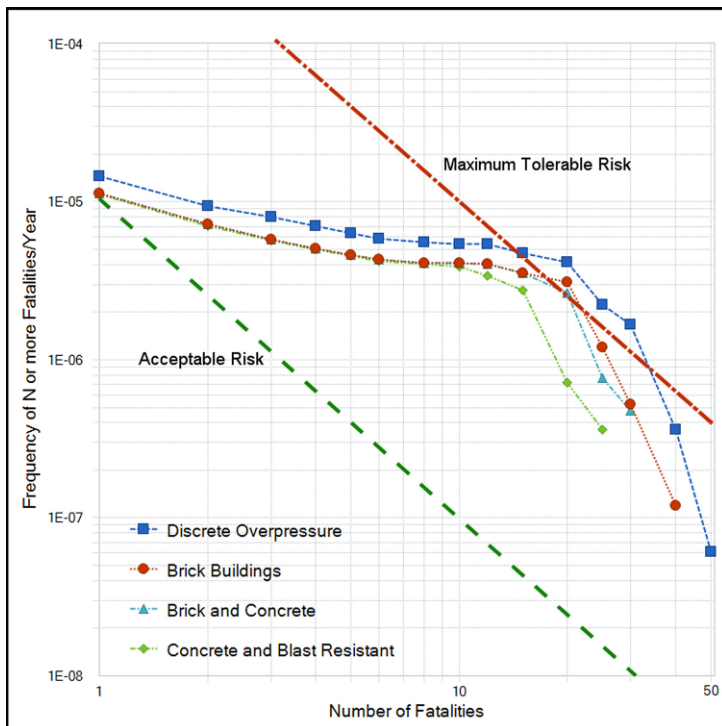
Phast Risk – 3D Congested Explosions

Overview of Building Vulnerability Modelling

Converting harmful effects into rates of fatality and injury is commonly referred to as “vulnerability modelling” and there are a number of published vulnerability models for toxic, flammable and explosion effects. In the case of explosions, you are interested in the effects of overpressures on people. This is strongly influenced by the properties of the building within which those people are located – individuals in a blast resistant structure will be less vulnerable than those in temporary buildings, for example. Similarly, different building types will offer different levels of protection from radiation and toxic effects. When deciding what kind of structure is appropriate, you need to be able to assess the influence of human vulnerability on risk for each type of harmful effect which may be present.



Simple plant plan showing occupied buildings, obstructed regions and exceedance contours



Effect of using different building types on overall societal risk

The recent extension to Phast Risk allows individual buildings to be defined with specific vulnerability data providing a much more accurate picture of the risks to which those within occupied buildings are exposed. The program supports a range of vulnerability models, specific to the effect type being considered. For explosion vulnerability, models are available which consider either overpressure or impulse, with the data being treated discretely or interpolated. For radiation effects you can choose from a flammable probit method and an intensity method.; the latter is particularly useful when considering escalation.

These vulnerability models have been implemented in a generic fashion, whereby any pressure-vulnerability relationship can be associated with a user defined building type. This methodology will therefore support most guidelines on the design and location of occupied building subject to explosion hazards, including, for example, API RP 752 and API RP 753.