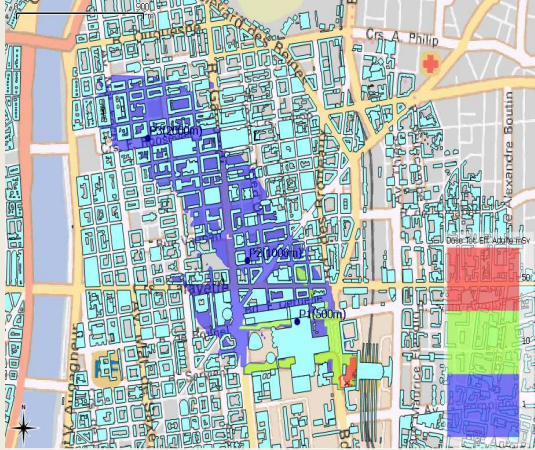# CERES® CBRN-E

An innovative software for modelling and decision-support to face CBRN-E risks and threats

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Health impact of R (top) or C (bottom) releases due to a bomb attack in a city

CERES® CBRN-E is a unique, integrated, operational tool, for preparedness and response in less than 15 minutes, in case of an emergency implying the atmospheric release of Nuclear, Radioactive, Biological or Chemical agents, possibly generated by an Explosion.

CERES® software is designed to model from the local to the regional scale (100 m to 50 km) in both rural and built environment (industrial site or urban district), the distribution of gases or aerosols, the deposition on the ground and buildings façades and roofs, the indoor-outdoor transfers, and the health consequences on population and first-responders of CBRN releases.
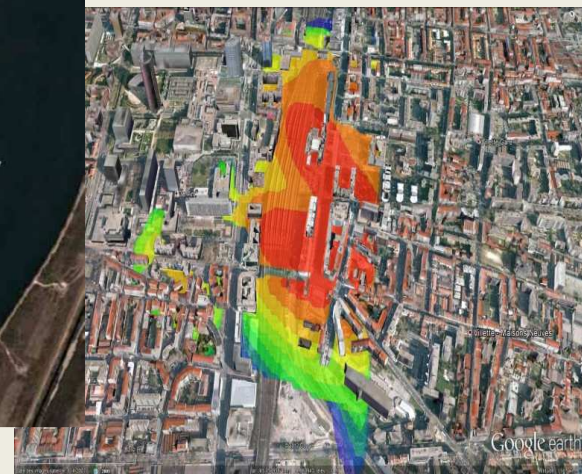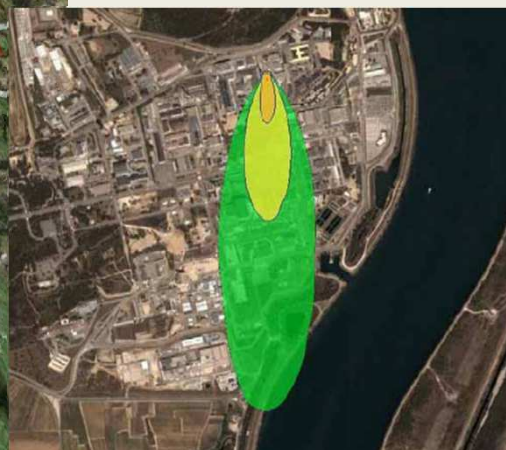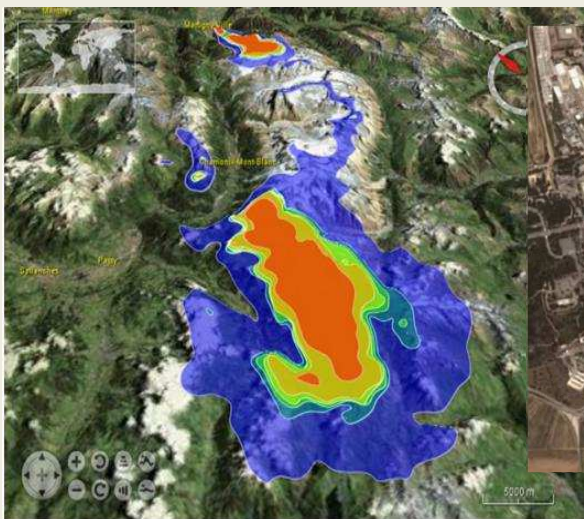
With the CEA experience in crisis prevention and mitigation, CERES® CBRN-E addresses the industrial plants operators as the emergency responders (e.g. rescue teams) and decision makers likely to handle with conventional risks or emerging malevolent or terrorist CBRN-E threats.

With its modular structure, CERES® provides the user with multiple choices:
- ✓ *Release scenario: leakage, spill, evaporation, spraying, fire, explosion…*
- ✓ *Definition of the meteorological data or importation of met' forecast*
- ✓ *Three modelling levels of the dispersion with or without buildings*

Produced as 2D mapping or 3D views, CERES® results are directly exploitable (chemical danger zones or radiological counter-measures zones) and exportable to Google Earth® or GIS like GeoConcept® or ArcGIS®.

Atmospheric concentrations of R or C agents in a natural or built environment

The development of CERES® CBRN-E relies both on ongoing tests by Fire Brigades in France, especially in Paris (under the aegis of DGSCGC and ENSOSP) and on R&D activities performed at CEA:
- ✓ Behaviour of chemical and biological agents
- ✓ Source term estimation using measurements
- ✓ Assimilation of in-field measurements in the simulations, etc.