![Urban Aware logo]

URBAN
AWARE

Urban Subsystem (USS)

Diverse and powerful incident modelling framework for CBRN/HazMat incidents, with impressive integration capabilities.

OVERVIEW

The Urban Subsystem (USS) is a flexible, integrated software platform. It combines both indoor and outdoor CBRN/HazMat dispersion models, providing emergency responders with increased situational awareness in complex urban environments.

It coordinates the use of different models, seamlessly mapping the transfer of hazardous airborne materials. Dispersion throughout indoor and outdoor environments can be accurately analysed, including infiltration into and exfiltration out of buildings. The USS framework also allows the user to select between high-fidelity models and coarser models, based on their specific time or accuracy requirements and data availability.

Integration is a core capability of the USS. Third party dispersion models can easily be built into the framework using separate adapter components that intelligently tailor the USS interface for either Indoor or Outdoor environments.

CREDENTIALS

The models which power this framework and the USS capability have been developed in close collaboration with Dstl. Currently, outdoor dispersion is provided by Dstl's Urban Dispersion Model (UDM), and indoor dispersion by either the multi-zone CONTAM dispersion model, or Dstl's single-zone Building, Ventilation and Infiltration Model (BVIM).

CONTAM allows individual rooms or floors to be modelled separately, with defined air flows between them. The CONTAM model considers the external pressure on the building at vent locations, but these can also be provided by an external model if required. This is important for high value buildings but requires detailed heating and ventilation system inputs, which may not always be available.

BVIM models the entire building as a single zone. It provides a rapid estimate of the infiltration and exfiltration without the need for detailed interior building model inputs. Instead, it uses various data to calculate the amount of material infiltrated. This includes both the average external concentration on the building's faces and the building's ventilation properties; which may be natural ventilation, simple mechanical ventilation, or fully specified mechanical ventilation with infiltration.

USE CASES

USS has been integrated into the US Defense Threat Reduction Agency's (DTRA) Hazard Prediction and Assessment Capability (HPAC). It is also now available to other Government and Commercial organisations through Riskaware.

USS can be used for the following applications:

- CBRN/HazMat incident management and disaster response

- Monitoring and Protection of high value buildings

- What-If analysis and mitigation response planning

- HazMat disaster policy planning and training
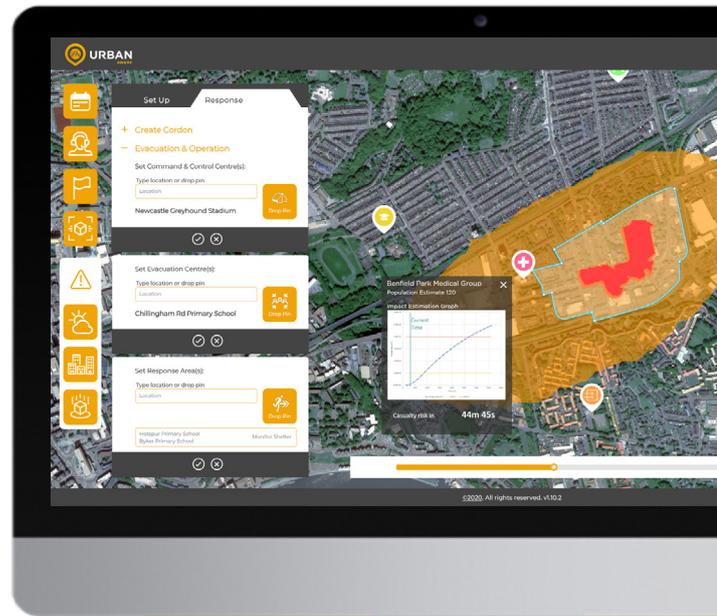
FEATURES

- Software framework enables indoor and outdoor dispersion models to be coupled in a flexible manner.

- High fidelity indoor modelling enables different heating and ventilation configurations to be modelled to inform emergency response and mitigation procedures.

- Lower-fidelity indoor modelling provides rapid situational awareness, empowering more informed live incident response.

- The ability to select a suitable modelling chain based on data availability.

- Increased performance using flexible combined fidelity dispersion modelling.

- Higher-fidelity simulation can be used in the vicinity of the release or for high value buildings and lower fidelity modelling for larger numbers of downwind buildings.

BENEFITS

- Improved situational awareness in complex urban environments, both indoors and outdoors.

- Provides critical information for prioritisation of evacuation requirements.

- Supports the integration of third-party indoor and outdoor dispersion models.

- Bridges indoor and outdoor hazard modelling domains for a more complete urban modelling capability.

For more information or to discuss how we can work together, please contact us on:

Email
info@riskaware.co.uk

Phone
+44 (0) 117 929 1058

Whitefriars
Lewins Mead
Bristol
BS1 2NT

@RiskawareUK

riskaware

RISKAWARE