

Overview of HSE's approach to dispersion modelling of major accident hazards in Great Britain

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The UK Health and Safety Executive (HSE) is responsible for a number of regulatory functions in Great Britain that relate to major hazard sites (such as refineries and chemical plants) and major accident hazard pipelines. HSE sets a land-use planning consultation distance around these major hazard installations, within which the planning authority must consult HSE over the public safety risks relevant to proposed new developments that may increase the population around these sites. HSE is also one of the agencies responsible for enforcing the Control of Major Accident Hazard (COMAH) Regulations 2015, and it investigates serious incidents and prosecutes operators of sites who have breached provisions under the Health and Safety at Work Act 1974, which aims to protect workers and those at risk from activities at major hazards sites.

In addition to these regulatory roles, HSE's Science and Research Centre undertakes a wide range of scientific research projects on a collaborative and commercial basis with UK and international partners. For example, HSE was commissioned by the Fire Protection Research Foundation (FPRF) and the US Pipelines and Hazardous Materials Safety Administration (PHMSA) to develop and maintain the LNG Model Evaluation Protocol, which PHMSA uses to assess and approve dispersion models for use in siting studies for LNG terminals.

One of the key tools used by HSE to quantify the potential hazards relating to atmospheric releases of toxic or flammable substances at major hazard sites in the UK is the dispersion model, DRIFT. HSE has conducted a number of validation exercises aimed at assessing the capabilities and limitations of this model, and has also funded the development and validation of source models that provide inputs to DRIFT for simulating jet releases, catastrophic vessel failures, evaporating pools and other phenomena. For some incident investigations, such as the Buncefield fuel storage depot explosion, HSE has used Computational Fluid Dynamics (CFD) to model vapour dispersion.

The aim of this presentation will be to provide an overview of HSE's approach to dispersion modelling of major accident hazards, with some examples of recent incident investigations and a summary of current challenges and knowledge gaps in the field of dispersion modelling.

Disclaimer

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