Editorial

Three papers on vapour cloud explosions

Three papers are presented in the first part of this issue, to illustrate the state of the art in predicting the effects of vapour cloud explosions. They were commissioned by the OECD/IGUS Working Group on Hazards and Mitigation of Industrial Explosions (IGUS = International Group of experts on Unstable Substances). The Working Group meets once per annum to discuss progress in the study of industrial explosions. Its members are drawn from Government bodies and from those organisations who advise Government bodies.

The papers reflect the three distinct stages in the study of vapour cloud explosions. Leyer writes about the unconfined explosion. Numerous experiments by several research organisations have demonstrated the difficulty in obtaining a blast wave sufficiently strong to damage buildings from an unconfined explosion with a low energy ignition. Van den Berg and Lannoy, amongst others, demonstrated that to obtain that strong, damaging, blast wave some means of accelerating the flame is needed. Partial confinement of the explosion and obstruction by items of the chemical plant can provide that acceleration mechanism. In The Netherlands the Multi-Energy method for predicting the blast overpressure from an accidental explosion makes use of the concept of flame acceleration by obstructions, and uses correlations based on simple numerical computations to guide the reader in making predictions. The authors suggest the use of more sophisticated computer codes to calculate the progress and acceleration of flame in the obstructed region. The paper by Hjertager describes one such code developed in Norway. Hjertager's computer model has been successful in predicting explosion pressures in simple situations and for the very congested situation on off-shore oil and gas rigs and it could be used to predict the pressure to be used as source for the Multi-Energy method.

The IGUS Working Group has been a focus for discussing the progress of this work, and for the interchange of ideas on an informal basis without the constraints of publication or commercial interests. I hope that it will continue to work in this way in future meetings.

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