The Potential for Vapor Cloud Explosions - Lessons from Buncefield

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Abstract

As a storage site, the Buncefield terminal had very little pipework congestion and at first sight would not have been considered as having much potential for a vapor cloud explosion. As a consequence, one of the actions of the Buncefield Major Incident Investigation Board (BMIIB) was to initiate a review the possible causes of the severe explosion on the site. This review was then extended to a Joint Industry Project, Phase 1 of which has offered an explanation of the cause of the explosion. The conclusions are summarized along with reference to relevant experimental studies, illustrating how the elements of the explanation were already known. The implications of the incident for the assessment of vapor cloud explosion hazards will be discussed, both in terms of understanding worst case consequences and the use of risk based approaches.