“A Way to Conduct a Facility/Stationary Source Siting Study”

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ABSTRACT
A facility/stationary source siting study was conducted at the E.I. duPont de Nemours & Co., Inc. site in Beaumont, Texas. This study was done to comply with recognized and good engineering practices, in accordance with OSHA 1910.119 and 40 CFR 68.67 (EPA), and utilizes API-RP 752 “Management of Hazards Associated with Location of Process Plant Buildings”.

Three main endeavors are addressed in the study:

1. Building and site fence line survey. This addresses occupancy and construction type of all site buildings. A site map is updated also to show emergency assembly points, occupied buildings, temporary safe havens, and fire alarm locations.

2. Hazard identification and Process Hazards Analysis (PHA) and Risk Management Plan (RMP). This effort reviews various hazards, as identified in the suite of extant PHA’s. Examples of hazards include vapor cloud explosions, vessel bursts, pool fires, dust explosions, toxic clouds, etc.

3. Impact to occupied buildings and offsite. Analysis was done of the effect of various hazards to occupied buildings. Some of the software used was “Vapor Cloud Explosion Contours” (VCEC); “Building Evaluation And Screening Tool” (BEAST); “Advanced System for Process Engineering” (ASPEN) for source modeling; “PVCalc” to analyze the structural integrity and pressure rating of ASME Section VIII, Division 1 pressure vessels; “TRACE” to model flammability and toxicity of vapor clouds; and some custom-designed Excel spreadsheets used to calculate vessel bursts and hydrogen detonation.

The paper will show how building type and occupancy, relative to process operations are selected to mitigate and minimize the risk. Lastly, emphasis will be made on how emergency response programs need to incorporate actions should toxic releases occur. Implementation of Management of Change procedures for facilities siting/stationary source is also discussed.