Source Characterization of Heavy Gas Dispersion Models for Reactive Chemicals. Volume 1

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Abstract: U.S. Air Force and other agencies which handle, store and transport chemicals, fuels and oxidizers are interested in determining the potential area of hazard posed by the dispersion of vapors generated by accidental spills. This report describes the mathematical models developed to described a variety of source types and the dispersion of vapor clouds/**plumes** in the atmosphere. Sixteen different source types are modeled including pressurized liquid releases, flashing and aerosol formation, two phase **jet** releases, explosive releases and releases of high vapor pressure liquids, cryogenic liquids and gases. Dispersion model takes into account the differences in source characteristics, high-than-air density of clouds (due to aerosol presence, temperature or molecular weight). Reactions of the chemicals, if any, ..th water vapor in the air are modeled and considered in the dispersion model. Transition from heavy gas dispersion to near neutral density dispersion is modeled without abrupt changes in size or discontinuity in concentrations. Keywords: Heavy gas, Dispersion, Mathematical model, Reaction, Source models, Concentration contours. (MJM)

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