Abstract

Workforce fatality risks arising from process and occupational hazards are traditionally assessed by different means. In the case of process hazards, quantitative risk assessment is used to determine Location Specific Individual Risk contours and derive Individual Risk Per Annum values for the work groups. Estimates for the fatality risk arising from exposure to occupational hazards are often obtained from statistically based compilations of industry-specific data on occupational injury and fatalities. These data are not facility-specific and do not recognize the contribution of controls implemented within the facility to reduce the risks.

This paper presents the results of a risk assessment of the process and occupational hazards in a combined cycle power station operating on coal seam gas in South West Queensland. Quantitative and semi-quantitative risk analysis techniques were combined allowing direct comparison of the risks. Fatalities resulting from occupational hazards are more likely to be single fatalities and the occupational risk to the work groups is significantly higher than their process risk. This is found to be similar in some other gas petrochemical industries in Australia and elsewhere.

A barrier model used for the control type allocations identified automatic shutdowns as a significant factor in reducing fatalities in the event of a process loss of control. The risk assessment exercise examined here highlights the value of undertaking advanced operationally focused analysis during the design phase of projects. A good approach will help to determine a wider range of contributing causes of occupational fatalities and the application of more rigorous engineering-based barrier controls can considerably reduce the risk of fatalities on gas plants.