An Overview of Worldwide Risk Tolerability Criteria for Chemical Process Industries

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Quantitative risk criteria has been accepted as a process safety management tool in many countries throughout the world. Risk-based legislation has been implemented by national governmental bodies, often with significant public input and/or scrutiny, indicating a high degree of societal endorsement of the values. There are at least three themes that are commonly used in the development of many generally accepted and recognized risk criteria: (1) a comprehensive risk management program must address both individual and societal risk; (2) risk criteria for the public must be lower, i.e. more conservative, than those for the workforce since the workforce risk is considered to be voluntary; and (3) with respect to individual risk, new facilities should be held to a higher level of risk performance than existing facilities. In contrast, societal risk criteria are universally identical for new and existing situations; i.e., where a potential exists for major accident events affecting large numbers of people, most regulators have judged that older facilities must meet the same standards as newer facilities.

The present paper evaluates various international risk criteria in use today, and evaluates their respective merits. It also provides suggestions for companies or countries considering implementing risk tolerability criteria.