

A Study of Model Based and Heuristic Analysis for Quantification of Safety Evaluation Technique in Chemical Processes

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The accidents in the chemical processes have more possibilities to be catastrophic disaster compared with other industry. So safety management for prevention rather than management after accidents is very important. And, safety audit, the one of various safety preventive methods, is performed in almost all chemical processes. Safety audit techniques are various by characteristics of process, but many type of techniques is not quantified and the result of safety audit can have difference by composition of safety audit team. In this study, we analyze accident type, cause and consequence, and obtain the pattern of specific relations of cause-consequence or type-consequence in accident data. We quantify the factor of safety audit using the frequency of that pattern and propose quantitative technique for safety audit. In order to quantity safety audit technique, we analyzed database of accident cases, and analyzed each accident cases in the aspect of cause, final event, equipment, activity and grasp each relations and make it into index. We reassess the process on which we performed safety audit, and can evaluate more quantitative.