

A Systematic Approach towards Accident Analysis and Prevention: the incorporation of the PDCA process into identification and prioritization of accident causes

구자민, 김승혁, 김영훈, 김효석, 윤인섭*
서울대학교
(esyoon@pslab.snu.ac.kr*)

A systematic approach towards accident analysis and prevention has been developed. It relies on System Theory as an incident causation model, and adopts a hybrid model for identifying elements of the safety management system. PDCA process, commonly practiced in business for quality control, has been applied to defining components of the system. Using the experts' judgment, accident data and their reported causes are correlated to the defined components, with RBI defined consequence scores as weighting factors. The application of this approach allows users such as governments and companies to identify and prioritize among causes of accidents and near-misses in the petrochemical industry. A case study using the accident data of Yeosu petrochemical complex from 1990 to 2004 has been applied to illustrate insights readily obtainable by using the developed analysis technique. The results suggest comprehensive identification and ranking of accident causes that assist effective prevention of accidents in the future.