

## Abstract

This independent study aimed to analyze failures and their effects in soap manufacturing process in order to implement quality improvement measures. The research methodology involved Failure Mode and Effect Analysis (FMEA) and quality control tools (Cause and Effect diagram, Pareto chart, Tree diagram and Matrix diagram).

This study started with using the fish bone diagram to identify root causes of three main quality problems. The major and minor causes from the fish bone diagram were used to analyze the failure and effect by employing FMEA technique. The problems with high Risk Priority Number (RPN) were selected for improvement using tree diagram and matrix diagram. The purpose was to decrease RPN by at least 30 percent and achieve waste reduction by at least 50 percent after implementing quality improvement activities for six months. It was found that the RPN decreased to 54.87 percent, and waste was decreased from 57.7 to 17.94 tons per month (68.91%). In conclusion, the application of FMEA technique and effective problem solving measures could be used to reduce the risk of quality problems and reduce waste in soap production process.