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KEY WORD : TEST CELL / PERMEATION / PERSONAL PROTECTIVE EQUIPMENT  
PREEYANUCH BURANAPAKDEE : THE STUDY OF TEST CELL EFFICIENCY FOR RESISTING PERMEATION OF LIQUID CHEMICAL AGENT THROUGH PERSONAL PROTECTIVE EQUIPMENT. THESIS ADVISOR: CHALERMCHAI CHAIKITTIPORN, Dr.P.H. PORNPIMON KONGTHIP,Ph.D. VAJIRA SINGHAKAJEN,M.A.  
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Occupational Dermatitis can be experienced by the employees who perform duties with chemicals and it is becoming an important disease in Thailand. Many chemicals are absorbed through skin. Therefore, personal protective equipment should be worn whenever skin contact is possible. This experimental research studies personal protective equipment's ability to resist permeation by liquid chemical agent by modifying the standard ASTM F 739 as a test cell and then analyzing by Gas Chromatography and gas sampling valve injection. The objective of this research is to study efficiency of test cell compare its efficiency with exposure to acetic acid and methyl alcohol in gloves model Sol-vex 37-165 and the chemical protection suit model Wet wear 600. The study is also designed for comparison of data between parts of personal protective equipment in different positions. Both the X axis and the Y axis were tested with each chemical for each type of protective equipment in 20 separate samples, and differences were measured.

The study found that precision of coefficient of variation of the breakthrough time among personal protective equipment confidence is less than 10% in both study of exposure to methyl alcohol in gloves model Sol-vex 37-165 and acetic acid in chemical protection suit model Wet wear 600. Coefficient of variation of the permeation rates are less than 10%. The comparisons of breakthrough time and permeation rate in parts of personal protective equipment between the X axis and in Y axis did not find a significant difference at  $\alpha = .05$  . The breakthrough time in this study was not significantly different when compared with data about company standard at  $\alpha = .05$  except for the study of acetic acid in chemical protection suit model Wet wear 600 where the difference in Y axis was significant ( $p = .001$ ) and permeation rate in this study was significantly different when compared with the data about company standard ( $p = .001$ ).