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DETECTOR TUBE

APIRADEE SRIOPAS : A DEVISED APPLIANCE FOR TOLUENE  
DETECTOR TUBE AS A DIRECT READING INSTRUMENT. THESIS  
ADVISORS: CHOMPUSAKDI PULKET, Ph.D., WANTANEE PUNPRASIT,  
Dr.P.H., CHAWEEWON BOONSHUYAR, M.S. 95 p. ISBN 974-663-305-8

The objectives of this study are to produce a- a toluene detector tube model, b- to compare the produced tube with the commercial one, and c- to test the produced tube under different storage conditions. The indicating gel packed into the tube was prepared by coating potassium iodate solution ( $KIO_3$ ). This chemical will become brown color when as a reaction with toluene vapor. The length of the brown color measured in the tube could correlate with the known concentrations of toluene. Also, the above tube model was tested to compare with Draeger tube at the known concentration levels of toluene 0.2, 0.5, 1.0, and 2.0 TLV generated dynamically.

Results of this study showed that the accuracy of the measurement at these levels of concentration was 15.90% at the concentration of toluene 0.2 TLV and 7.13%, 6.54%, and 1.08% at the concentration of toluene 0.5, 1.0, and 2.0 TLV, respectively. The comparison between the produced tube and Draeger tube was not significantly different. The comparison between the read-outs of the tube storage in refrigerators and in room temperature for 1 week was not significantly different. However, the tube storage for 2 and 4 weeks were significantly different.

The research study showed that the efficiency of the above tube model could be equivalent to the commercial one. The intensity and the stain length can be read clearly and easily. Therefore, the method used to produce toluene detector tube described in this study should be appropriate for commercial production in Thailand in order to reduce the costs of industrial hygiene.