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CLOTHING

ORAWICH KONGSUK : THE EFFECTIVENESS OF PROTECTIVE  
CLOTHING TO REDUCE COLD STRAIN IN CANNED FOOD WORKERS.  
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The research study aimed to study the effect of two kinds of clothing on the thermophysiological responses of cannery workers and to determine the subjective feelings of the workers during work in cold storage. The environmental conditions of cold storage were an average air temperature of  $-15.5^{\circ}\text{C}$ , average air velocity of 0.5 m/s, and approximate relative humidity of 95 %. Two types of clothing were used. Clothing consisted of a layer of 100% weave nylon, and a layer of polyester padding. One type of clothing was coated with polyurethane while the other type was not coated. The protective ensemble consisted of coverall, hood, socks, and gloves in the same pattern and same weight. The experiments were performed in order to assess the effect of protective clothing on exposure to cold stress.

Five healthy males working in the canned food industry were selected as the subjects. These subjects underwent eight continuous hours of exercise testing. The work schedules were designed as 45 minutes work and 15 minutes rest, for eight work periods to make one work day. Each subject was tested for five work days of wearing each type of clothing giving total exposure time for all subjects of 50 days. Rectal temperature, mean skin temperature, finger and toe skin temperature were measured every 30 seconds during the experimental period. Heart rate was continuously monitored and concerning recorded at 1 minute intervals. Questionnaires were used to collect data about the feelings of fatigue and psychophysical rating bollots during the exercise test.

Results of the study revealed that worker's core temperature and heart rate did not differ significantly between coated and uncoated ensemble during any work periods ( $p > 0.05$ ). Mean skin temperature, finger skin temperature, and toe skin temperature were significantly different depending on whether coated or uncoated clothing were worn during six work periods ( $p < 0.05$ ), but not during the fourth and the last work periods ( $p > 0.05$ ). Workers' feelings of fatigue and psychophysical rating bollots were not significantly different for either type of clothing for any work periods ( $p > 0.05$ ). The results of this study showed that the coated material used for protective clothing was more effective for reducing the amount of cold strain as measured by mean skin temperature, finger skin temperature, and toe skin temperature than uncoated clothing. Most of the subjects felt more comfortable when using either type of protective clothing as compared to when using the clothing normally provided by the factory.