

UNIVERSITI TEKNOLOGI MARA

**OCCUPATIONAL HEAT STRESS AND HEAT
RELATED STRAIN ASSESSMENT IN BODY
SHOP UNIT OF AUTOMOTIVE INDUSTRY**

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Project submitted in fulfillment of the requirements for
the degree of
**Bachelor in Environmental Health and Safety
(Hons.)**

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DECLARATION BY STUDENT

Project entitled “Occupational Heat Stress and Heat Related Strain Assessment in Body Shop Unit of Automotive Industry” is a presentation of my original research work. Whenever contributions of others are involved, every effort is made to indicate this clearly, with due reference to literature, and acknowledgement of collaborative research and discussions. The project was done under the guidance of Project Supervisor, Mr. Razi Ikwan Bin Md Rashid. It has been submitted to the Faculty of Health Sciences in partial fulfilment of the requirement for the Degree of Bachelor in Environmental Health and Safety (Hons).

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ABSTRACT

Occupational Heat Stress and Heat Related Strain Assessment in Body Shop Unit of Automotive Industry

Heat stress are known as one of the occupational health hazards that can present in the workplace due to the exposure of heat whether from process generated and hot environment. Heat strain on the other hand, are known as part of heat stress problems which can lead to the disruptions of physiological response among workers. The aim of this study was to conduct assessment regarding on heat stress and heat related strain in Body Shop unit of automotive industry which perform welding work as the main activity. Heat stress was measured in Body and Fitting line section of Body Shop unit using of wet-bulb globe temperature (WBGT) equipment after the monitoring of workplace conditions was conducted. Meanwhile, heat strain assessment was conducted individually to the selected workers in the same location. The result of WBGT indoor are slightly high in the Body line section which are at 25.26 °C compared in the Fitting line section which are only at 25.11 °C. However, the Relative Humidity (RH) level in both line section had slightly exceed the acceptable range (from 40% to 70%). The RH in the Body line section was ranged from 60.68% to 80.36% while in the Fitting line section was at 60.80% to 75.88% which may pose a potential to involve with heat stress exposure. The result of Heat Strain Score Index (HSSI) shows that more than half of the participants in both line section had involved with low heat strain (71.43% in Body line section and 75.55% in Fitting line section) (Green Zone) followed by having on potential occurring of heat strain (25.71% in Body line section and 17.78% in Fitting line section) (Yellow Zone) and least involved with the heat strain occurrence (2.86% in Body line section and 6.67% in Fitting line section) (Red Zone). Furthermore, Chi square test shows that there are no significant relationship between the exposure of heat stress and HSSI result ($p > 0.05$). Thus, workers in both line section tend to expose with heat stress exposure below the acceptable limit and also have low of heat strain exposure which make the condition of the workplace consider safe to perform the job.

Keywords: *Heat stress, Heat related strain, Wet bulb globe temperature (WBGT), Relative Humidity (RH)*