

UNIVERSITI TEKNOLOGI MARA

**THE EFFECT OF THERMAL
ENVIRONMENT ON
PHYSIOLOGICAL PARAMETERS
AMONG PALM OIL MILL WORKERS**

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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

My original research work was entitled "The Effect of Thermal Environment on Physiological Parameters among Palm Oil Mill Workers" and I have clearly complete each chapters in this project. The contributions from all parties have made me enthusiastic and hard work to clearly denote the importance of this project by referring to the literature review, acknowledgement of collaborative research and also discussions in this project. This project was completely done under the guidance from my Project Supervisor, Mr. Razi Ikhwan Bin Md. Rashid. Final year project is one of the requirement to complete the Degree of Bachelor in Environmental Health and Safety (Hons) and the project has been submitted to the Faculty of Health Sciences in UiTM Kampus Puncak Alam.

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In the name of Allah, The Most Gracious, The Most Merciful.

Alhamdulillah, Thanks to Allah SWT, whom with His willing giving me the opportunity to complete this Final Year Project entitled “The Effect of Thermal Environment on Physiological Parameters among Palm Oil Mill Workers”. This final years project report was prepared for Faculty of Health Sciences, Universiti Teknologi Mara (UiTM) Puncak Alam, basically for final year student to complete the undergraduate program that leads to the Bachelor of Environmental, Health and Safety (Honours).

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ABSTRACT

Working in thermal environment for hours pose great risks on developing heat illness to the workers and eventually impacts on their work performance. The risk may extend due to climate change and give massive effect to the workers. Concern to these issues, the purpose of this research was to study the effect of thermal environment on physiological parameters among palm oil mill workers. A total of 32 palm oil mill workers are participate in this study that came from six workstations which are boiler, press station, sterilizer, loading ramp, bunch press, and oil room. Participant's physiological parameters such as blood pressure, heart rate and oral temperature before and after eight hours of work were taken using standard and systemic method. Each workstation environment parameters such as average WBGT and relative humidity was measured using QUESTemp[®]34 Thermal Environment Monitor. Heat Strain Stress Index (HSSI) questionnaire that developed by Dehghan et al., (2013) was used to identify the level of heat stress among workers. From the study that was conducted, the average WBGT in boiler, press station, sterilizer, loading ramp, bunch press and oil room are 27.99, 32.42, 28.38, 28.54, 27.86, and 28.58 respectively while relative humidity are 74.68%, 58.14%, 78.83%, 64.81%, 77.03%, and 70.00% respectively. Paired sample t-test on physiological parameters between before and after eight hours shows significant different between it. As for HSSI score, the mean scores for green, yellow and red zone are 8.96, 16.04 and 19.36 respectively. According to correlation test between average WBGT with physiological changes and HSSI, fair to good correlation were achieved. However correlation between physiological changes and HSSI shows fair correlation achieve for systolic pressure and heart rate only. The finding of this study shows that workers at risk of heat stress. So control measure is required to prevent this problem.

Keywords: Heat stress, Physiological Changes, HSSI, WBGT