

UNIVERSITI TEKNOLOGI MARA

**OCCUPATIONAL HEAT STRESS AND ITS
ASSOCIATION WITH PHYSIOLOGICAL
PARAMETERS AT A SELECTED STEEL MILL**

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Draft project submitted in fulfilment of the requirements for degree of
Bachelor of Environmental Health and Safety (Hons.)

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DECLARATION BY STUDENT

Project entitled “Occupational Heat Stress and Its Association with Physiological Parameters at a Selected Steel Mill” 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 Dr. Shantakumari Rajan. 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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In the name of Allah S.W.T. the Most Gracious, the Most Merciful

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ABSTRACT

Many workers are exposed to heat during their job either outdoors or in hot indoor environments. Tasks that expose workers to the potential of getting heat stress are activities involving high humidity, high air temperatures, high radiant heat sources, direct physical contact with hot objects, or labour intensive activities such as metal casting industries. When there is heat stress forced on the human body, it causes heat strain which triggers physiological responses. The objective of this study is to determine heat exposure on steel mill workers and its effect on physiological parameters. Fifty two workers from the steel mill participated in this study. Their physiological parameters were measured before and after 8 hours of work and the ambient temperature was monitored throughout the 8 working hours. The results show half of the workstations had ambient temperature readings exceed the Action Limit and Threshold Limit Value by American Conference of Governmental Industrial Hygienists. Albeit there were increases in physiological parameters between before and after work, all of the values are still maintained under the normal range except for systolic pressure. There were no significant differences between physiological parameters before and after 8 hours of work only for body temperature and systolic pressure. The study also found that there was no correlation between the ambient temperature and the physiological parameters due to a p-value is more than 0.05 ($p > 0.05$). Although half of the workstation exposed workers to high heat, their physiological parameters were not affected, this might have occurred due to the workers' ability to acclimatize in hot environment because they have been employed for more than a year.

Keyword: Heat stress, Steel mill, Ambient temperature, Physiological parameters, Acclimatization