

UNIVERSITI TEKNOLOGI MARA

**ASSESSMENT OF INDOOR
BIOAEROSOLS IN URBAN AND
RURAL CLASSROOMS**

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Project submitted in fulfillment of the requirements for
the degree of

Bachelor in Environmental Health and Safety (Hons.)

Faculty of Health Sciences

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DECLARATION BY STUDENT

Project entitled “Assessment of Indoor Bioaerosols in Urban and Rural Classrooms” is a presentation of our 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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ACKNOWLEDGMENT

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

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ABSTRACT

Statistically, human spend most of their time at indoor environments in which making the exposure towards the harmful organisms more possible. However, children are more susceptible to environmental pollutants compared to adults, since they breathe more air relatively to their body weight and also have less ability to manage with the toxic chemicals due to their undeveloped respiratory system. The aim of this study was to determine and compare the indoor airborne bacteria and fungi as well as to discover the relationship between airborne bacteria and fungi concentration with physical parameters in urban and rural classrooms. A methodology based upon passive sampling (open plate technique) was used for this study. The technique was being done as petri dish was left open using settle plate method. From the results obtained for airborne bacteria, both urban and rural classrooms exceeded bacterial CFU acceptable limit set by DOSH (500 CFU/m³). This is mainly cause by children activities during sampling days. Other factors include human occupancy, inadequate ventilation, temperature and relative humidity. Moreover, there were no significance difference ($p>0.05$) of airborne bacteria concentration between urban and rural classrooms. On the other hand, all classrooms from both areas had fungi concentrations below than standard (1000 CFU/m³) as regulated by DOSH. The analysis result showing that there was significant different between the fungi concentrations in urban and rural areas ($p<0.05$). Higher fungi concentrations were found in urban area compared to rural area. Factors that contribute to this event include environmental condition during the sampling and dense vegetation across the school area. Apart from that, this study had proven that relative humidity was correlated with the growth of airborne bacteria and fungi. However, results showed uncorrelated for temperature and occupancy rate. Lower number of samples and constant temperature during sampling activities might affecting the results.

Keyword: *Airborne bacteria, airborne fungi, children, classroom, urban, rural*