

UNIVERSITI TEKNOLOGI MARA

**INDOOR AIR QUALITY AND PREVALENCE OF
SICK BUILDING SYNDROME AMONG OFFICE
WORKERS AT PADANG BESAR AND BUKIT
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ABSTRACT

The purpose of this research was to study the relationship between physical factors of indoor air quality which is relative humidity, temperature, and also carbon dioxide concentration as an indicator of the effectiveness of the ventilation system with the prevalence of Sick Building Syndrome (SBS) among office workers working in two different buildings (new and old) in Kedah and Perlis. This cross-sectional study consisting of 53 office workers in Building A (new) and 66 office workers in Building B (old). Questionnaires method was used to analyse the occurrence of symptoms and prevalence of Sick Building Syndrome (SBS) among respondents. An instrument recommended by IAQCOP 2010 was used to measure and evaluate indoor air quality in the buildings. Statistical analyses of data involved both method which is descriptive and inferential. The results showed that there were significant differences for temperature ($p < 0.001$) and carbon dioxide concentrations ($p < 0.001$) between Building A and Building B. The temperature in Building B is very low, with median value, 21:54°C and there is also high of concentration of carbon dioxide with reading value of up to 11189.75 ppm which were not meet the acceptable limit set by DOSH, Malaysia. There was no significant difference for prevalence of Sick Building Syndrome (SBS) among building A and building B. Chi-square tests was used to identify the relationship between exposure to indoor air quality factors with the prevalence of Sick Building Syndrome (SBS) showed that there was a significant association between the concentration of carbon dioxide and prevalence of Sick Building Syndrome (SBS) in Building B ($p = 0.011$, OR = 4,731, 95% CI = 1,341 -16,566).

Keyword: relative humidity, temperature, carbon dioxide concentration, Sick Building Syndrome (SBS)

CHAPTER 1

INTRODUCTION

1.1 Background of study

Being in a building makes one feel comfortable and safe assuming it has protection from any weather changes and polluted outdoor environment. Commonly, humans spend almost 80% of his life in a building either at work or own residence (Yang & Heinsohn, 2007). In recent years, the quality of the indoor environment is also an issue due to complaints from occupants and this problem is believed affects health. Each individuals are at risk for a variety of internal health problems in their daily activities even in indoors activity.

One of the environmental factors in workplace is the indoor air quality in a building. A good air quality control is important to achieve the goal of sustainable development. Besides that, air is a basic element needed in the human respiratory system and it is a key player in determining a healthy life, comfort and increased productivity of each individual. If the air condition is not conducive, then it will disrupt the human body system. According to the US Environmental Protection Agency or EPA (2005), characteristics of good indoor air quality includes adequate ventilation, control of contamination air, and appropriate temperature and relative humidity monitoring.

Poor indoor air quality affects health and comfort of building occupants. Sick Building Syndrome (SBS) is one of the effects caused by the problem. SBS is a situation where building residents experience acute health effects or comfort or both related to the time spent in a building, but there is no specific disease or cause identifiable (IAQCOP, 2010). Failure to take immediate and effective action regarding the problem in the building will give worse impacts.