

**UNIVERSITI TEKNOLOGI MARA**

**FINE PARTICLES IN THE KITCHEN OF CULINARY  
TRAINING CENTRE AND THE HEALTH RISK TO THE  
STAFFS AND STUDENTS**

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**Project submitted in partial fulfilment of the requirement for the degree of  
Bachelor (Hons.) in Environmental Health and Safety**

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## Declaration by Student

Project entitled “Indoor Particulate Emission from Cooking Activities in the Kitchen’s Training institution” is a presentation of my original research work. Wherever contributions of others involved, every effort is made to indicate this clearly, with due reference to the literature and acknowledgement of collaborative research and discussions. The project was done under the guidance of Mr Abdul Mujid Bin Abdullah as Project Supervisor. It has been submitted to the Faculty of Health Sciences in partial fulfilment of the requirement for Bachelor of Degree in Environmental Health and Safety (Hons.).

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## **ABSTRACT**

### **Fine Particles In The Kitchen Of Culinary Training Centre And The Health Risk To The Staffs And Students**

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Cooking is one of the major sources of indoor air pollution in the kitchen that may cause adverse health effects to human. Most of the symptoms are not noticeable and usually lead cardio-respiratory illness. A cross-sectional study was carried out to determine concentration of particulate emission from three different cooking activities, namely lamb shank grilling, shrimp frying and cake baking in four kitchen at the training institution. The health risk assessment was conducted to determine association with cooking fumes release by PM<sub>2.5</sub> and UFPs. The concentration of fine particles was measured TSI Dust-Trak II Aerosol and P-Trak (UFC). The health risk assessments was calculated to determine the risk of getting cardio-respiratory illness among staffs and students. The average mass concentration of PM<sub>2.5</sub> and UFPs during grilling was higher in Culinary Lab 2 which are 242.05 µg/m<sup>3</sup> and 49621 particles/cm<sup>3</sup> compared with Culinary Lab 1. In general, average concentration of particulate for all cooking activities does not exceed the acceptable limit in Industry Code of Practice (IAQ) 2010. To evaluate risk of UFPs emit by gas stoves, estimation of health risk is based on total cooking emission, individual intake fraction and health risk factor. The results conclude that there are no adverse on long term effects to the staffs and students.

**Keywords : PM<sub>2.5</sub>, UFPs, Kitchen, Risk Assessment**