Lung function study of kindergarten children living in a vicinity to a petrochemical industrial area in Paka, Terengganu / Quah Hui Hsien.

Lihat sebelah

LUNG FUNCTION STUDY OF KINDERGARTEN CHILDREN LIVING IN A VICINITY TO A PETROCHEMICAL INDUSTRIAL AREA IN PAKA, TERENGGANU

By

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Research Report submitted in partial fulfilment of
the requirements for the degree of
Bachelor of Science (Biological Sciences)

Department of Biological Sciences
Faculty of Science and Technology
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI MALAYSIA
2004

JABATAN SAINS BIOLOGI
FAKULTI SAINS DAN TEKNOLOGI
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI MALAYSIA

PENGAKUAN DAN PENGESAHAN LAPORAN PROJEK PENYELIDIKAN I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk:

LUNG FUNCTION STUDY OF KINDERGARTEN CHILDREN LIVING IN A VICINITY TO A PETROCHEMICAL INDUSTRIAL AREA IN PAKA, TERENGGANU.

oleh QUAH HUI HSIEN, No. Matrik UK5407

telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Biologi sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah SARJANA MUDA SAINS (SAINS BIOLOGI), Fakulti Sains dan Teknologi, Kolej Universiti Sains dan Teknologi Malaysia.

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AKNOWLEDGEMENTS

I would like to express my gratitude to my supervisor Cik Faridah for her guidance and advice. Her patience and support is always highly appreciated.

And, special thanks to all the kindergarten's authorities, teachers, the children and their parents for cooperation. All of them haven given excellent responses in this study. Their cooperation, patience and understanding are always highly appreciated.

Also special thanks to all my friends for leading me a hand during sampling. Last but not least, my warmest family for their full support and encouragement.

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API	Air pollution index.
BTPS	Body temperature and pressure
CO	Carbon monoxide.
CO_2	Carbon dioxide.
COPD	Chronic Obstructive Pulmonary Disease.
ELF	Epithelial lining fluid.
FEV_1	Forced expiratory volume in 1 second.
FEV_1%	Percentage of forced expiratory volume in 1 second.
FVC	Forced vital capacity
H_2S	Hydrogen sulphide
NH_3	Ammonia
NO_2	Nitrogen oxide
NO_X	Oxides of nitrogen
O_3	Ozone
PAHs	Polycycle aromatic hydrocarbons
Pb	Lead
PM_{10}	Particulate matter with diameter less than 10 μm
$PM_{2.5}$	Particulate matter with diameter less than 2.5 μm
SO_2	Sulphur dioxide
SO_X	Oxides of sulphur
VC	Vital capacity
VOC	Volatile organic compound

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ABSTRAK

Laporan ini merupakan keputusan daripada kajian mengenai fungsi peparu kanak-kanak tadika yang tinggal berdekatan dengan kawasan perindustrian petrokimia. Masalah respirasi sering dikaitkan dengan masalah pencemaran udara walaupun kurang kajian dijalankan di Malaysia. Perindustrian petrokimia telah dilapor merupakan sumber pencemaran udara yang utama, bahan pencemaran dari loji petrokimia merupakan bahan karsinogen ini. Objektif kajian ini adalah untuk menguji fungsi peparu kanak-kanak tadika yang tinggal berdekatan kawasan perindustrian petrokimia (kawasan kajian) dan membandingkannya dengan kanak-kanak yang tinggal jauh dari kawasan perindustrian petrokimia (kawasan rujukan). 66 kanak-kanak dari tiga tadika di kawasan perindustrian petrokimia dan 65 kanak-kanak dari tiga tadika di kawasan rujukan telah dipiilih sebagai subjek kajian. Satu set soal selidik telah diedarkan dan diisi oleh ibubapa kanak-kanak masing-masing dan fungsi peparu mereka diuji dengan menggunakan vitalograph spirometer dalam keadaan berdiri. Seperti yang dijangka, fungsi peparu kanak-kanak yang tinggal berdekatan kawasan perindustrian petrokimia adalah lebih rendah daripada kanak-kanak di kawasan rujukan. Mereka menunjukkan perbezaan yang signifikan dalam ukuran VC, FVC dan FEV_1. Di samping itu, simptom-simptom respirasi terutamanya batuk adalah lebih prevalen di kawasan perindustrian petrokimia berbanding dengan kawasan rujukan. Oleh itu, gas yang dibebaskan dari kilang perindustrian petrokimia di Paka mungkin meninggalkan kesan yang tidak baik terhadap sistem respirasi kanak-kanak seperti yang ditunjukkan iaitu, fungsi peparu yang rendah dan prevalen yang tinggi terhadap simptom-simptom respirasi.

ABSTRACT

Reported herewith are the results from a study of lung function of kindergarten children living near a petrochemical industrial area. Air pollution has been associated with respiratory symptoms although there is a lack of such studies in Malaysia. Petrochemical industrial area is reported as the major air pollution sources with the pollutants from the plant considered as environmental carcinogens. The objective of this study was to determine the lung function of kindergarten children living near the petrochemical industrial area (study area) compared to children living farther away from the plant (reference area). 66 kindergarten children from three kindergartens in petrochemical industrial area and 65 kindergarten children from three kindergartens in reference area have been chosen as the study subjects. A set of questionnaires were distributed and filled by the parents and the lung function (VC, FVC and FEV_1) was tested by a vitalograph spirometer in standing position. As expected, the lung functions of kindergarten children living near the petrochemical were significantly lower than children in reference area. They showed significant differences in measurement of VC, FVC and FEV_1. In addition, respiratory symptoms especially cough, were more prevalent in petrochemical area compared to reference area. Therefore, the emission from the petrochemical industry in Paka may have some adverse impact on these children's respiratory system as indicated by low lung function and high prevalence of respiratory symptoms.