

UNIVERSITI TEKNOLOGI MARA MALAYSIA

**TREATMENT OF MUNICIPAL SOLID WASTE
ODOUR USING ELECTRON BEAM
IRRADIATION TECHNIQUE**

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Thesis submitted in fulfillment
of the requirements of the degree of
Doctor of Philosophy

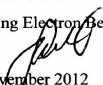
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November 2012

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ABSTRACT

Environmental Quality, Clean Air Regulation was enforced since 1st October 1978 in Malaysia. However, it does not contain any standard parameters for odour control and discharge to the environment. In order to respond to various odour complaints and handle odour problems in Malaysia, a regulation for odour control is necessary. Since Malaysia will be declared a developed country in the year 2020, environmental legislations of the country have to be improved to the standards of a developed country. The objective of this research is to study the odour problems in Malaysia, specifically for Municipal Solid Waste (MSW) odour, to identify the sources of odour from MSW, odour measurement and analytical by olfactometer, correlation between odour unit and concentration in ppmv and ppbv, odour treatment using electron beam irradiation technique, odour kinetic and dispersion modeling. In this study, the odorous gas such as Benzene (aromatic odour), Dimethylsulfide (rubbish odour) and Trimethylamine (fishy odour) are also used as odours samples. Odorous gas samples were treated by using the powerful energy produced by electron beam. Ambient and odorous gas samples were also collected from Refuse Derived Fuel (RDF) factory and in surrounding area in Semenyih, Selangor and these samples were analyzed by using DynaScent Digital Olfactometer. The results of the emission measurement and the ambient air collected around the study area showed that there are various factors that affect the distribution of odorous gas to the complaint area that is only less than 1.5 km from the factory. The result also shows that there is great potential in using the electron beam irradiation technique in order to solve the odour problem.

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