

Biotechnologies towards Sustainable Development in Malaysia

Zarina Zainuddin

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Analysis of xylene degradation by bacteria isolated from petroleum contaminated sites

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Introduction

Hydrocarbons release to the environment whether on land or in sea often happens due to leakage or accident and it requires a lot of effort to remove it. These pollutant chemicals can be degraded naturally with the help of the primary residents of the Earth; the microorganisms. Monoaromatic hydrocarbons such as xylene are composed of single benzene ring as the basic structure. They are volatile and commonly found in crude petroleum and other petroleum derivatives. Considered as one of the major environmental pollutions, the widespread occurrences in the environment mainly because of leakage from underground petroleum storage tanks and also spills at petroleum production wells, refineries, pipelines and distribution terminals.

Xylene has two methyl group attached to its benzene ring and it can occur in either ortho-, meta- or para- xylene. Usually used as solvent in paint, printing, rubber and leather industries it was classified as most common organic groundwater pollutants. Microorganisms that are able to oxidize xylene are numerous and ubiquitous in the environment (Rittman and McCarty, 2001). The pathways for aromatic hydrocarbons essentially involve oxidation reaction up to the point at which two hydroxyl groups are adjacent to each other on the ring. The ring is then cleaved by