

Tributyltin-resistant bacteria from contaminated surface sediment

Abdussamad Abubakar¹, Muskhazli Mustafa², Wan Lutfi Wan Johari³, *Ferdous Mohamat-Yusuff⁴, Syaizwan Zahmir Zulkifli² and Ahmad Ismail²

^{1,3}*Department of Environmental Sciences, Faculty of Environmental Studies, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia*

²*Department of Biology, Faculty of Science, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia*

⁴*Environmental Forensics Research Centre ENFORCE, Faculty of Environmental Studies, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia*

*Corresponding author. Tel.: +603 89468023; email address: ferdausmy@upm.edu.my

Resistance to tributyltin (TBT) was examined in pure bacteria cultures isolated from TBT-polluted sediments. We defined a TBT-resistant bacterium as one which grows in a TBT concentration above the reported concentration at the sampling site (Kong Kong Laut), which was less than 1000µg/l. More than 15 pure colonies of bacteria were isolated which are mostly Gram negative and more than 80% percent of these isolates are possible TBT-degrading bacteria due to their ability to resist TBT concentration of up to 1000µg/l. All TBT-resistant bacteria are potential TBT degrading bacteria but may not degrade the TBT. However, TBT degrading bacteria must be TBT resistant bacteria. These TBT-resistant bacteria were also examined for their biodegradability and they shows capability of degrading TBT, suggesting that these microorganism can utilize the carbon source in the pollutant. This study has successfully shown that these bacteria isolated from Kong Kong Laut are potential TBT-degrading bacteria and this also paves a major pathway for sustainable remediation solution.

Keyword: Tributyltin, resistance, biodegradation, sediment, bacteria