

# RECENT ADVANCES IN BIOENVIRONMENTAL ENGINEERING

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Mohd Ismail Abdulkarim ■ Md Zahangir Alam  
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# **Recent Advances in Bioenvironmental Engineering**

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## CHAPTER 8

Water Sampling and Testing for Nonpoint Source Pollution Load Estimation in Malaysia

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### **Introduction**

Water resources are degraded due to addition of pollutants from point and nonpoint sources. Point pollution sources are usually noticeable, confined and the pollutant loads into the rivers and other water bodies are comparatively easy to estimate. Therefore, state of the art technologies can be easily and efficiently applied to abate pollution from the point sources (PS). On the contrary, nonpoint pollution sources (NPS) are not confined and it is difficult to estimate and capture the pollutants to reduce water pollution problems. Nonpoint pollution, directly and clearly, is governed by storm runoff. For the same housekeeping practices, more runoff means more pollution load. Due to high rainfall (more than 2000 mm per year), tropical regions have higher susceptibility to nonpoint source pollution both for rural and urban areas. Runoff from the agricultural lands are the main contributor to nonpoint pollution in rural areas; whereas residential land covers contribute significant amount of nonpoint pollution in the urban areas, which is more complex in nature compared to the agricultural and less developed areas. However, the major contributors of NPS pollution in urban areas are residential, industrial, commercial, institutional, recreational sites, roads and highways, parking lots, sewage treatment plants (overflows), etc. It has been reported that, even from the urban areas with good house-keeping practices, most of the nonpoint pollutants are generated