

# **BASIC KNOWLEDGE IN MARINE SCIENCES**

Edited by

Normawaty Mohammd-Noor



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## **Chapter 24 Determination of Dissolved Inorganic Nitrogen (DIN) in Marine Environment**

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### **Introduction**

Nitrogen is a major nutrient element that required by plants and aquatic organisms to grow and survive (Garrison, 2005). It is one of the nutrient compounds that is commonly of great interest in environmental studies due to the ecological significance of its pollution (Suhaimi *et al.*, 2004). The dissolved inorganic nitrogen (DIN) components exist in the form of nitrite, nitrate and ammonium in aquatic environment (Le Tissier *et al.*, 2006). Nitrite is an intermediate form in the ammonium oxidation and in the nitrate reduction that occurs in wastewater treatment plants, water distribution system and natural waters (APHA, 1998). Nitrate is commonly found in groundwater and sometimes can reach aquifers by percolation of agricultural fertilizers, livestock manure and surface runoff (HDR/EES, 2007). Usually, it has a limited concentration in surface water, but sometimes it can reach in a high level in some groundwaters (APHA, 1998). Ammonium in surface water is increasing due to the wastewater effluents and surface water runoff from fertilized fields (HDR/EES, 2007).

Excessive nitrate concentrations in water will contaminate drinking of water, and may cause an illness called methamoglobinemia in infants (APHA, 1998). Nitrite and nitrate can pose a threat public health by affecting oxygen-carrying capacity of blood in infants that will cause serious illnesses, shortness of breath, blue skin and affect the spleen if exposed chronically (HDR/EES, 2007). Thus, the DIN components analyses are required to prevent these contamination and threat from occurring in the environments. These components in water samples are determined by using photometric methods in different analyses (Satyanarayana, 2007).