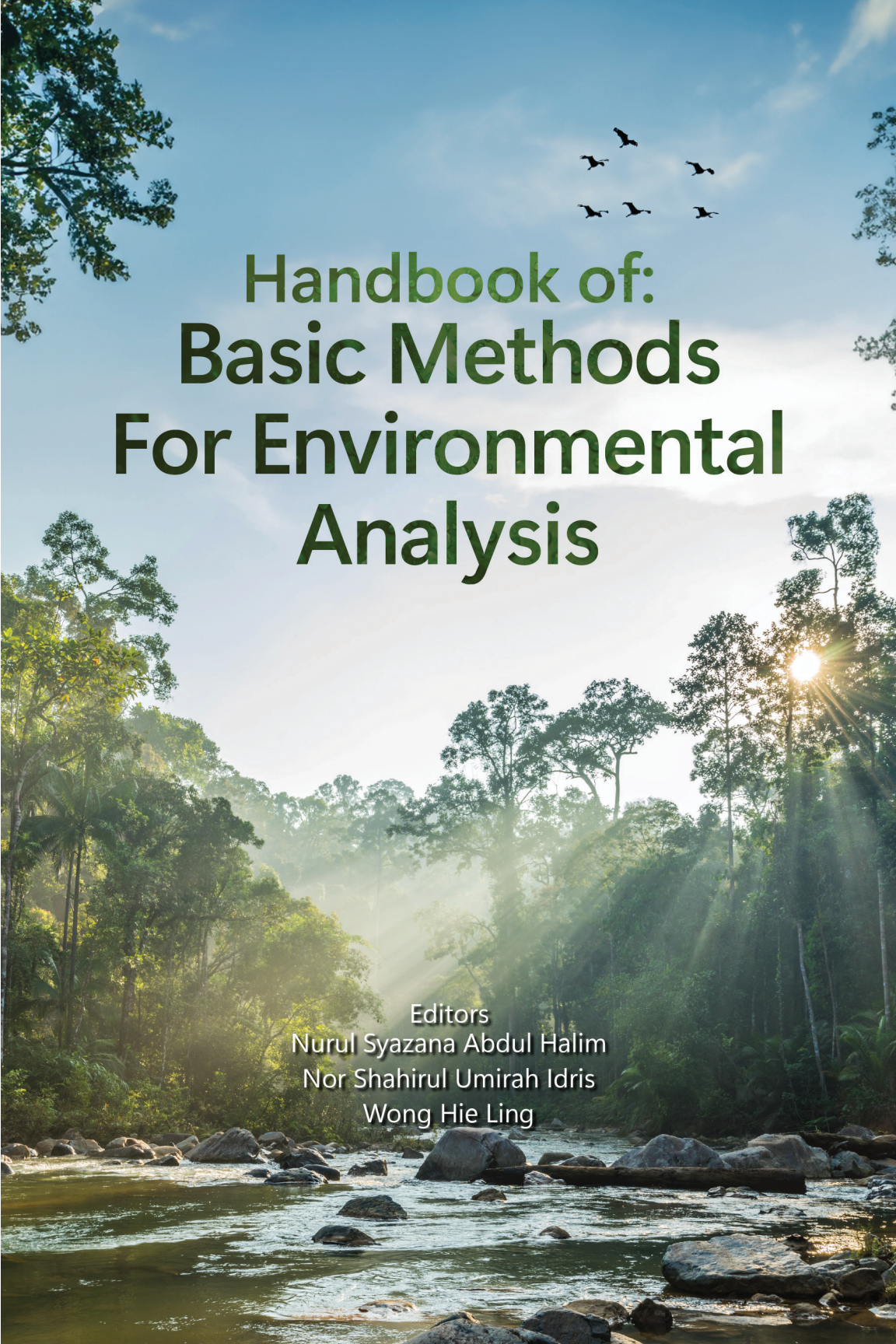

# Handbook of: Basic Methods For Environmental Analysis

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Cataloguing-in-Publication Data

Perpustakaan Negara Malaysia

A catalogue record for this book is available from the National Library of Malaysia

ISBN 978-967-0021-61-4

Executive Producer: Azman Hashim. Copy Editor: Amirul Firdaus Zilah, Raihana Sulaiman. Acquisition Editor: Nur Fatihah Pahazri.
Concept & Typesetting: Siti Aishah Mokhtar. Proof Reader: Zaliha Noor
Technical Assistant: Mohd Suhairi Mohamad.

Published by:
UMK Press
Universiti Malaysia Kelantan
Office of Library and Knowledge Management
16300 Bachok, Kelantan
(Member of Malaysian Scholarly Publishing Council (MAPIM))
(Member of Malaysian Book Publishers Association (MABOPA)
Membership Number : 201903)

Printed by:
Pustaka Aman Press Sdn Bhd
4200-A Simpang tiga Telipot,
Jalan Sultan Yahya Petra
15150 Kota Bharu Kelantan

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# PREFACE

Environmental analysis is an integral part of environmental management to protect the environment and human health. Over time, equipment and techniques in the environmental analysis have evolved to account for various environmental issues including pollution. This Handbook aims to present fundamental analytical methods for tracking changes in different environmental compartments ranging from water, and air to soil using appropriate indicators.

On-site and off-site measurements during the respective field and laboratory experiments can be expensive due to the costs associated with equipment, labour, and time. However, the measured field data deem very important to reflect what happened under the actual conditions and for environmental monitoring purposes as part of regulatory procedures.

This Handbook consists of an overview of basic equipment and methods to investigate common environmental issues. What we hope, is that readers will find this Handbook a useful reference. We thank all authors for their extraordinary competence in sharing their knowledge in specific fields.

**Nurul Syazana Abdul Halim**
**Nor Shahirul Umirah Idris**
**Wong Hie Ling**

# CHAPTER 1
# INTRODUCTION TO ENVIRONMENT

*Nurul Syazana Abdul Halim*

## WHAT IS THE ENVIRONMENT?

In simple words, the environment is everything around us, which includes the biotic and abiotic components. The biotic component is referring to the living things (the human, flora, and fauna including fungi, bacteria, and viruses) that shape an ecosystem; whereas, the abiotic component is the non-living factors that are present in the ecosystem such as temperature, water, soil, light, wind, nutrients and etc. (Figure 1.1).

## THE CONNECTION BETWEEN BIOTIC AND ABIOTIC COMPONENTS

Both biotic and abiotic components are important and connected. For example, in an ecosystem, there are many types of plants, animals, and insects. Plants depend on the heat from the sun to produce food through the photosynthesis process. In the process of photosynthesis, they consume a large amount of carbon dioxide and supply oxygen, which is used by animals and humans to breathe. At the same time, they need water and good soil with a suitable pH and nutrients to grow. In this case, the plant is the biotic component that relies on many abiotic factors in order to survive. Meanwhile, herbivores like cows, goats, zebras, elephants, and others depend on the plant as their energy source and also as a source of oxygen. They also rely on other abiotic factors to live. This scenario is similar for other living organisms (carnivores, insects, humans), but each organism has different needs for abiotic factors.