

WATER QUALITY for Ecosystem and Human Health



Second edition

UNEP Global Environment Monitoring System (GEMS) Water Programme
with
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IAP Water Programme



WATER
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Water Quality for Ecosystem and Human Health



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Freshwater scarcity ranks among the most urgent environmental challenges of this century. To improve water management and measure the achievement of internationally agreed goals on water and sanitation, countries and organizations need access to relevant information.



The data and analyses presented in *Water Quality for Ecosystem and Human Health 2nd Edition* are from GEMStat, the global water quality database created by UNEP's GEMS/Water Programme, the only programme in the UN system exclusively dedicated to monitoring and assessing environmental water quality. Drawing on examples from around the world, *Water Quality for Ecosystem and Human Health* presents assessments of current water quality status and trends. It also provides an introduction to a diverse range of global water quality issues, including approaches to their identification, analysis and resolution.

The wide range of environmental pressures in different countries and regions, and the reality of limited resources available for monitoring, assessment and remediation, make it difficult to obtain a global picture of water quality. However, the publication highlights a number of salient issues. On the negative side, human activities are the principal cause of deteriorating quality of water resources, even in remote environments, and impaired aquatic ecosystems can negatively impact human health and socio-economic progress. It is clear that new threats to aquatic ecosystems, for example by pharmaceuticals and personal care products, require immediate attention by regulatory authorities at all levels. On the positive side, successful procedures have been developed for restoring aquatic ecosystems, including remedying damage caused by acidification and eutrophication.

To build on these achievements and track the effectiveness of policies and interventions, both baseline data and long-term monitoring of aquatic ecosystems are a priority. The GEMS/Water Programme provides a vital contribution to monitoring progress towards meeting the Millennium Development Goal and World Summit on Sustainable Development targets on water and sanitation. Current pH data and assessment demonstrate that such targets can be met. This is only one example, but it does show that, at least in some parts of the world, the quality of water resources is improving. As such, *Water Quality for Ecosystem and Human Health* provides encouragement to continue, and increase, our efforts to protect and improve our water resources for ecosystem health and human well-being.

A handwritten signature in black ink, which appears to read 'Achim Steiner'.

Achim Steiner
Executive Director, United Nations Environment Programme

Preface

This is the first report of its kind produced by the GEMS/Water Programme, and the target audience includes academia, research scientists, and water practitioners. I hope that the report proves particularly useful and encouraging for my colleagues and their constituents in developing and transitional countries.



As Achim Steiner points out, measuring the achievement of the internationally agreed goals on water and sanitation is a core service provided by GEMS/Water, and emphasizes the importance of implementing UNEP's Bali Strategic Plan on Technology Transfer and Capacity Building, to improve data acquisition and quality, particularly in developing countries.

The difficulties involved in monitoring, describing and managing inland aquatic resources are not insurmountable, and certainly there are many examples of successful interventions. Here are a few from Asia:

- Concerns over health effects of certain compounds in humans and animals have lead to bans of certain pesticides in different parts of the world. Pesticide bans have brought in noticeable improvements in water quality for several rivers in China;
- Restoration of the marshes in Iraq is underway and early results show promising improvements in water quality and biodiversity; and
- River and lake restoration in Japan is extensive and many successes have been documented in systems that are heavily urbanized and located in areas of extremely high population densities.

Although many challenges remain to properly protect aquatic ecosystem health, there is proof that success can be reached with planning, political and institutional will, and financial and technical resources. The future of water quality at local, regional, and global scales depends on investments of individuals, communities, and governments at all political levels to ensure that water resources are protected and managed in a sustainable manner, and that our good health is the result.

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