

Drinking Water Quality-Standards and Controls

By

John De Zuane, Van Nastrand Reinhold,
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Water quantity is an important resource for any nation and protection and appropriate management of this resource has become a significant public issue in the last three decades. Out of number of uses to which water can be put, water for drinking purposes is most important and crucial. This not only includes top priority but also requires water of the best quality. Recent detection of contamination of drinking water supplies, through industrial pollution and improper sanitary land-fill design and operation, has damaged the quick evaluation of many chemicals, particularly synthetic organic chemicals, most of whose potential ill effects were not known until last fifteen years.

A number of books have come up in the area of water quality, the present book deals with specific aspects of drinking water quality-standards and control. This book is a practical handbook that will help professionals examine and evaluate water quality control at every stage of the water path, from the source to the treatment plant, from the distribution system to the consumer.

The book opens with the first chapter on "Potable Water" covering responsibilities to the consumer, definition of potable water, water consumption, how to make water potable, and the role of health authorities. Chapter two covers the traditional analysis of "Physical Parameters", their significance in public health. Parameters like taste and odor, colour temperature, pH, alkalinity, hardness, TDS, turbidity, solubility etc. have been covered in details.

Chapter three deals with "Inorganic Chemical Parameters" dividing them into four categories type "A" chemicals are water quality parameters closely scrutinized by the Health Authorities in consideration of their known potential toxicity and their expected presence in drinking water. Inorganic chemicals listed under type "B" are water quality parameters those have been examined extensively by the Health Authorities, when the concern is definitely their toxicity, their occurrence in potable water is rare, and when their occurrence in the consumer's tap is widely expected, their toxicity is of limited concern. Type "C", inorganic chemicals are the parameters that may have a high level of occurrence in drinking water, but are safe at the concentration. The parameters coming in type "D" are very likely to be found in small concentration in raw or drinking water.

In all, about 45 parameters are discussed covering their chemistry, environmental exposure, health effects, standards, analysis and removal.

Chapter four covers the "Chemical Parameters" which fall under organic compounds. About 80 parameters have been discussed under volatile compounds, synthetic organic chemicals, Penols. THMs.

Chapter five caters to the "Micro-biological Parameters" explaining about water borne diseases and providing details of bacteria, viruses and pathogenic protozoa. A number of case studies showing out-break of water borne diseases are given.

Chapter six is devoted to "Radioactive Parameters" providing chemistry of nuclear compounds, concepts of radio-activity, standards relating to radio-activity and its health effects.

Chapter seven is focused on "Carcinogens" providing research directions and standards. Chapter eight gives a comprehensive view of "Water Analyses" providing sampling and monitoring, laboratory analyses, laboratory personnel, physical facility, equipment, methodologies, interpretation of laboratory reports.

Chapter nine brings out "Public Health Regulations" and chapter ten is devoted to "Water Treatment" including water works components, water works intake, treatment plant details, distribution system and maintenance of potability. This chapter gives fairly good details of treatment systems and their suitability.

The book ends with useful appendices relating to conversion factors, official standards for water quality given by WHO and USEPA, format for laboratory reports, radionuclides and fluoride data etc.

This book is an excellent information source for water resources engineers and managers engaged in water quality monitoring and protection works. This book will definitely find favour with graduate students and researchers because of its well thought and in-depth treatment of the subject. The book has been written in a format so that it can serve as a handbook for practising engineers. The book is highly recommended for anybody who is responsible for water quality monitoring and analysis and for maintaining the quality of drinking water and protection of this critical resource. The presentation is simple and lucid, yet technical.

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This book explores the current issues and recent international developments in reservoir planning and operation, design and construction, monitoring and maintenance. In the light of the recent climatic changes which have seen a reduction in rainfall and resulted in water shortages, a number of selected subjects are dealt and examined in detail. For example, the provision of new resources, the evaluation of optimal operating policies, a review of water supply options, sedimentation effects, the environmental aspects and the economic viability of reservoirs. Numerical models and CAD systems have been described for evaluation.

Some case studies related to water resources in India are also presented, like evaluation impacts on environment of Narmada Sagar project, the water resources of Madras, and reservoir competency study made in respect of limestone formations found upstream of Kodalalli Dam in Uttara Kannada district of Karnataka state.

The book will be of particular interest to engineers and hydrologists engaged in reservoir operation, design and supervision.

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