

---

# Cooling Water Treatment Principles And Practices Charts

---

Thank you very much for downloading **Cooling Water Treatment Principles And Practices Charts**. As you may know, people have search hundreds times for their chosen readings like this Cooling Water Treatment Principles And Practices Charts, but end up in malicious downloads.

Rather than reading a good book with a cup of coffee in the afternoon, instead they are facing with some infectious virus inside their laptop.

Cooling Water Treatment Principles And Practices Charts is available in our digital library an online access to it is set as public so you can get it instantly.

Our books collection saves in multiple locations, allowing you to get the most less latency time to download any of our books like this one.

Kindly say, the Cooling Water Treatment Principles And Practices Charts is universally compatible with any devices to read

*Cooling Water  
Treatment Principles  
And Practices Charts*

Downloaded from  
[ftp.wagnit.v.com](http://ftp.wagnit.v.com) by guest

---

## HOOPER RICHARD

---

### **Cooling Water Problems and Solutions**

Butterworth-Heinemann  
Many cooling systems use water as cooling medium. They are found in public buildings, industrial production systems or power plants. Almost every cooling system using water is degraded by deposition, corrosion and microbiological fouling. This book identifies the whole bunch of problems due to water cooling systems and proposes specific solutions to all of them. The authors have an expertise of over 20 years solving cooling water problems. In this book, they advise all practitioners which need to plan, buy or operate cooling systems.

### **Drinking Water: Principles And Practices**

McGraw Hill Professional  
The first edition of this book was published in 2008 and it went on to become IWA Publishing's bestseller.

Clearly there was a need for it because over the twenty years prior to 2008, the knowledge and understanding of wastewater treatment had advanced extensively and moved away from empirically-based approaches to a fundamental first-principles approach based on chemistry, microbiology, physical and bioprocess engineering, mathematics and modelling. However the quantity, complexity and diversity of these new developments was overwhelming for young water professionals, particularly in developing countries without readily available access to advanced-level tertiary education courses in wastewater treatment. For a whole new generation of young scientists and engineers entering the wastewater treatment profession, this book assembled and integrated the postgraduate course material of a dozen or so professors from research groups around the world who have made significant contributions to the advances in wastewater treatment.

This material had matured to the degree that it had been codified into mathematical models for simulation with computers. The first edition of the book offered, that upon completion of an in-depth study of its contents, the modern approach of modelling and simulation in wastewater treatment plant design and operation could be embraced with deeper insight, advanced knowledge and greater confidence, be it activated sludge, biological nitrogen and phosphorus removal, secondary settling tanks, or biofilm systems. However, the advances and developments in wastewater treatment have accelerated over the past 12 years since publication of the first edition. While all the chapters of the first edition have been updated to accommodate these advances and developments, some, such as granular sludge, membrane bioreactors, sulphur conversion-based bioprocesses and biofilm reactors which were new in 2008, have matured into new industry approaches and are also now included in this second edition. The target readership of this second edition remains the young water professionals, who will still be active in the field of protecting our precious water resources long after the aging professors who are leading some of these advances have retired. The authors, all still active in the field, are aware that cleaning dirty water has become more complex but that it is even more urgent now than 12 years ago, and offer this second edition to help the young water professionals engage with the scientific and bioprocess engineering principles of wastewater treatment science and technology with deeper insight, advanced knowledge and greater confidence built on stronger competence.

*Chemical Water Treatment* National

Academies Press

Legionnaires' disease, a pneumonia caused by the Legionella bacterium, is the leading cause of reported waterborne disease outbreaks in the United States. Legionella occur naturally in water from many different environmental sources, but grow rapidly in the warm, stagnant conditions that can be found in engineered water systems such as cooling towers, building plumbing, and hot tubs. Humans are primarily exposed to Legionella through inhalation of contaminated aerosols into the respiratory system. Legionnaires' disease can be fatal, with between 3 and 33 percent of Legionella infections leading to death, and studies show the incidence of Legionnaires' disease in the United States increased five-fold from 2000 to 2017. Management of Legionella in Water Systems reviews the state of science on Legionella contamination of water systems, specifically the ecology and diagnosis. This report explores the process of transmission via water systems, quantification, prevention and control, and policy and training issues that affect the incidence of Legionnaires' disease. It also analyzes existing knowledge gaps and recommends research priorities moving forward.

*Standard Methods for the Examination of Water and Wastewater* Springer Science & Business Media

Environmental Chemistry, Eighth Edition builds on the same organizational structure validated in previous editions to systematically develop the principles, tools, and techniques of environmental chemistry to provide students and professionals with a clear understanding of the science and its applications.

Revised and updated since the publication of the best-selling Seventh Edition, this text continues to emphasize

the major concepts essential to the practice of environmental science, technology, and chemistry while introducing the newest innovations to the field. The author provides clear explanations to important concepts such as the anthrosphere, industrial ecosystems, geochemistry, aquatic chemistry, and atmospheric chemistry, including the study of ozone-depleting chlorofluorocarbons. The subject of industrial chemistry and energy resources is supported by pertinent topics in recycling and hazardous waste. Several chapters review environmental biochemistry and toxicology, and the final chapters describe analytical methods for measuring chemical and biological waste. New features in this edition include: enhanced coverage of chemical fate and transport; industrial ecology, particularly how it is integrated with green chemistry; conservation principles and recent accomplishments in sustainable chemical science and technology; a new chapter addressing terrorism and threats to the environment; and the use of real world examples.

#### **Challenges and Opportunities for Corporate Water Stewardship**

Chemical Publishing Company  
Mineral scale deposits, corrosion, suspended matter, and microbiological growth are factors that must be controlled in industrial water systems. Research on understanding the mechanisms of these problems has attracted considerable attention in the past three decades as has progress concerning water treatment additives to ameliorate these concerns.

*Industrial Water Resource Management*  
Butterworth-Heinemann

This book documents the proceedings of the symposium, "Mineral Scale

Formation and Inhibition," held at the American Chemical Society Annual Meeting August 21 to 26, 1994, in Washington, D. C. The symposium, sponsored by the Division of Colloid and Surface Chemistry, was held in honor of Professor George H. Nancollas for his pioneering work in the field of crystal growth from solution. A total of 30 papers were presented by a wide spectrum of scientists. This book also includes papers that were not presented but were in the symposium program. The separation of a solid by crystallization is one of the oldest and perhaps the most frequently used operations in chemistry. Because of its widespread applicability, in recent years there has been considerable interest exhibited by academic and industrial scientists in understanding the mechanisms of crystallization of sparingly soluble salts. The salt systems of great interest in industrial water treatment area (i. e. , cooling and boiler) include carbonates, sulfates, phosphates, and phosphonates of alkaline earth metals. Although not as common as calcium carbonate and calcium sulfate, barium and strontium sulfates have long plagued oil field and gas production operations. The build-up of these sparingly soluble salts on equipment surfaces results in lower heat transfer efficiency, increased corrosion rates, increased pumping costs, etc. In the laundry application, insoluble calcium carbonate tends to accumulate on washed fabrics and washing equipment parts, resulting in undesirable fabric-encrustation or scaling.

#### **Water-Formed Deposits** World Scientific

The Landmark Water Use and Treatment Resource—Fully Updated for Optimizing Water Processes This industry-standard

resource from the world's leading water management company offers practical guidance on the use and treatment of water and wastewater in industrial and institutional facilities. Revised to align with the latest regulations and technologies, The Nalco Water Handbook, Fourth Edition, explains water management fundamentals and clearly shows how to improve water quality, minimize usage, and optimize treatment processes. Throughout, new emphasis is placed on today's prevailing issues, including water scarcity, stressors, and business risk. Covers all essential water treatment topics, including:

- Water management fundamentals
- The business case for managing water
- Water sources, stressors, and quality
- Basic water chemistry
- Impurity removal
- Steam generation
- Cooling water systems
- Safety for building water systems
- Post-treatment
- Energy in water systems
- Water applications across various industries

Elsevier

1. REVERSE OSMOSIS BASIC CONCEPTS -  
 2. FEED WATER TYPE AND ANALYSIS - 3.  
 RAW WATER REQUIREMENTS - 4. SEA  
 WATER INTAKE - 5. SEA WATER DOSING  
 SYSTEMS - 6. REVERSE OSMOSIS  
 PRETREATMENT CONVENTIONAL  
 PRETREATMENT - 7. REVERSE OSMOSIS  
 PRETREATMENT MICROFILTRATION and  
 ULTRAFILTRATION - 8. MATERIALS - 9.  
 REVERSE OSMOSIS MEMBRANES - 10.  
 PRESSURE VESSELS AND RACKS - 11.  
 REVERSE OSMOSIS PUMPS - 12.  
 RECOVERY SYSTEMS - 13. REVERSE  
 OSMOSIS RACKS CONTROL - 14.  
 REVERSE OSMOSIS RACKS EQUIPMENT -  
 15. RACKS CLEANING SYSTEM and  
 FLUSHING - 16. TREATED WATER  
 CONDITIONING - 17. TREATED WATER  
 DEPOSIT AND PUMPING - 18.  
 NEUTRALIZATION, EFFLUENTS

TREATMENT AND BRINE DISCHARGE -  
 19. ELECTRICAL EQUIPMENT - 20.  
 CONTROL SYSTEMS - 21. VARIOUS  
 EQUIPMENT - 22. COST EVALUATION OF  
 DESALINATION PLANTS - BISAC: 1:  
 TEC005050 Technology & Engineering :  
 Construction - HVAC 2: TEC009070  
 Technology & Engineering : Mechanical  
 3: TEC010030 Technology & Engineering  
 : Environmental - Water Supply

**The Nalco Water Guide to Cooling  
 Water Systems Failure Analysis,  
 Second Edition** Wiley-Interscience

Publisher's Note: Products purchased from Third Party sellers are not guaranteed by the publisher for quality, authenticity, or access to any online entitlements included with the product. The Most Complete, Current Guide to Failure Analysis for Cooling Water Systems Fully updated for the latest technologies and techniques, this new edition describes proven procedures for determining the root cause of cooling system failure, correcting the problem, and preventing future occurrences. The first section covers cooling water system design and operation and features ten new chapters on the various materials most commonly found in cooling systems. The remaining four sections discuss waterside corrosion, cracking, mechanical damage, and material and design issues. This authoritative resource explains how to identify failure locations and mechanisms, recognize critical factors influencing failure, carry out inspection procedures, and implement preventive measures to reduce damage. Illustrative case histories are provided in each chapter. The Nalco Guide to Cooling Water Systems Failure Analysis, Second Edition, covers: Carbon and alloy steel Cast iron Stainless steel Copper alloys Aluminum alloys Corrosion-resistant alloys Coatings

Nonmetallic materials Brazed and soldered joints Corrosion monitoring Crevice and underdeposit corrosion Oxygen corrosion Biologically influenced corrosion Acid corrosion Alkaline corrosion Galvanic corrosion Dealloying Intergranular corrosion Graphitic corrosion Localized and pitting corrosion Corrosion fatigue Stress corrosion cracking Erosion-corrosion Cavitation Manufacturing defects Weld defects Design and operating conditions

**Refrigeration, Air Conditioning and Heat Pumps** Springer Science & Business Media

The three primary reasons that the cooling water treatment may be required are to control corrosion, scale formation, and the growth of biological agents. Any of these problems - or more usually a combination of them - can cause a loss of efficiency, shorten equipment life and push up operating costs. Imagine the large amounts of dollars lost when insufficient cooling suddenly curtails operations of process equipment's. A very high percentage of people responsible for operation and maintenance of cooling water systems have little or no knowledge of water technology and are therefore totally reliant on specialist water treatment companies to provide up to date cost-efficient water treatment programs suitable for their particular plants. This 5-hr Quick Book presents an overview of common chemical treatment program that may be required to maintain cooling water systems in good operating condition. Reasons and means are discussed for controlling scale, deposition, corrosion, and biological fouling. The discussion also covers the information on chemicals used for control, and methods available to permit operation within the limits. The course is

divided in four (4) sections and three (3) annexures: SECTION -1: SCALE INHIBITION SECTION -2: CORROSION INHIBITION SECTION -3: BACTERIAL & MICROBIOLOGICAL CONTROL SECTION -4: WATER TREATMENT EQUIPMENT AND CONTROLS Annexure - 1: Characteristics of some common scale inhibitors Annexure - 2: Typical dosage rates, pH range and characteristics of common corrosion inhibitors Annexure - 3: Typical dosage rates, pH range and characteristics of common biocides The course is applicable to engineers and designers involved in power plants, oil and gas, chemical and petrochemical process facilities, refineries, industrial plants and HVAC systems in commercial buildings. The reader must take a multiple-choice quiz consisting of twenty five (25) questions at the end to enhance course learning. Learning Objective At the conclusion of this course, the student will: 1.Understand the critical parameters such as conductivity, TDS, pH, alkalinity and saturation index applicable to cooling water treatment 2.Understand the factors responsible for scale and corrosion 3.Understand the types of scale and methods to minimize its formation 4.Understand relationship between the cycles of concentration and blowdown 5.Understand the physical methods of treating water such as softener, dealkalizer, ion-exchanger, filtration, and electronic de-scaling equipments 6.Understand the corrosion types and the control techniques to mitigate corrosion 7.Learn four types of corrosion inhibitors including, anodic, cathodic, mixed and adsorption types 8.Understand the principles of cathodic protection 9.Learn the possible types of biological fouling and the treatment methods including oxidizing and non-

oxidizing biocides 10. Understand the chemical feed equipment for closed and open cooling water systems 11. Learn the five application methods for dosing chemicals including their benefits and limitations 12. Learn the control sensors and monitoring devices used in cooling water treatment

*An Introduction to Cooling Tower Water Treatment* Elsevier

Drawing on the vast experience of the most respected firm in the industry, *Water Treatment Principles and Design* is the first major reference on the science of water treatment in several decades. It covers both the practical and theoretical aspects of water quality analysis, treatment plant operation, and facility design, and provides detailed descriptions of processes such as coagulation and flocculation, sedimentation, filtration, ion exchange, and adsorption. In addition, it offers one of the most extensive discussions ever published on design criteria, including component description and organization, aeration equipment, upflow clarifiers, disinfection, and materials.

*Principles of Water and Wastewater Treatment Processes* VCH Publishers  
*Membrane-Based Hybrid Processes for Wastewater Treatment* analyzes and discusses the potential of membrane-based hybrid processes for the treatment of complex industrial wastewater, the recovery of valuable compounds, and water reutilization. In addition, recent and future trends in membrane technology are highlighted. Industrial wastewater contains a large variety of compounds, such as heavy metals, salts and nutrients, which makes its treatment challenging. Thus, the use of conventional water treatment methods is not always effective. Membrane-based hybrid processes have

emerged as a promising technology to treat complex industrial wastewater. Discusses the properties, mechanisms, advantages, limitations and promising solutions of different types of membrane technologies Addresses the optimization of process parameters Describes the performance of different membranes Presents the potential of Nanotechnology to improve the treatment efficiency of wastewater treatment plants (WWTPs) Covers the application of membrane and membrane-based hybrid treatment technologies for wastewater treatment Includes forward osmosis, electro dialysis, and diffusion dialysis Considers hybrid membrane systems expanded to cover zero liquid discharge, salt recovery, and removal of trace contaminants

**Basic Principles of Water Treatment for Cooling Water Systems** Springer Nature

the definitive guide to the theory and practice of water treatment engineering THIS NEWLY REVISED EDITION of the classic reference provides complete, up-to-date coverage of both theory and practice of water treatment system design. The Third Edition brings the field up to date, addressing new regulatory requirements, ongoing environmental concerns, and the emergence of pharmacological agents and other new chemical constituents in water. Written by some of the foremost experts in the field of public water supply, *Water Treatment, Third Edition* maintains the book's broad scope and reach, while reorganizing the material for even greater clarity and readability. Topics span from the fundamentals of water chemistry and microbiology to the latest methods for detecting constituents in water, leading-edge technologies for

implementing water treatment processes, and the increasingly important topic of managing residuals from water treatment plants. Along with hundreds of illustrations, photographs, and extensive tables listing chemical properties and design data, this volume: Introduces a number of new topics such as advanced oxidation and enhanced coagulation Discusses treatment strategies for removing pharmaceuticals and personal care products Examines advanced treatment technologies such as membrane filtration, reverse osmosis, and ozone addition Details reverse osmosis applications for brackish groundwater, wastewater, and other water sources Provides new case studies demonstrating the synthesis of full-scale treatment trains A must-have resource for engineers designing or operating water treatment plants, *Water Treatment, Third Edition* is also useful for students of civil, environmental, and water resources engineering.

*Boiler Water Treatment* Elsevier

Even though most of the Earth's surface is covered with water, most of it is not directly usable for human consumption or applications. As the population increases and our general style of living standards increase, the importance of useable water is becoming acute. This book addresses this issue with approaches to treating water sources that require removal of unwanted or dissolved substances. In particular, it covers various methods for removing dissolved ionic materials. There are numerous methods for accomplishing this end, and the book reviews most of them in some depth.

[Short Course on Cooling Tower Principles and Associated Water Treatment](#) John Wiley & Sons

Chlorination in various forms has been

the predominant method of drinking water disinfection in the United States for more than 70 years. The seventh volume of the *Drinking Water and Health* series addresses current methods of drinking water disinfection and compares standard chlorination techniques with alternative methods. Currently used techniques are discussed in terms of their chemical activity, and their efficacy against waterborne pathogens, including bacteria, cysts, and viruses, is compared. Charts, tables, graphs, and case studies are used to analyze the effectiveness of chlorination, chloramination, and ozonation as disinfectant processes and to compare these methods for their production of toxic by-products. Epidemiological case studies on the toxicological effects of chemical by-products in drinking water are also presented.

**An Operator's Guide to Biological Nutrient Removal (BNR) in the Activated Sludge Process**

Independently Published

PARTIAL CONTENTS - PART - I. BOILER BASICS - Chapter 1. Boiler - An Introduction - Chapter 2. Classification of Boilers - Chapter 3. Common Terms and Explanation - PART - II. BOILER WATER TROUBLES - Chapter 4. Impurities in Water and Their Effects - Chapter 5. Boiler Water Troubles - A Prelude - Chapter 6. Scale Formation - Chapter 7. Silica Carryover - Chapter 8. Scale Formation in Economizers - Chapter 9. Super Heater and Turbine Deposits - Chapter 10. Corrosion - Basic Information - Chapter 11. General Corrosion (Overall Corrosion / Acidic Corrosion) - Chapter 12. Dissolved Oxygen Corrosion (Pitting Corrosion) - Chapter 13. Carbondioxide Corrosion - Chapter 14. Corrosion caused by Unstable Salts - Chapter 15. Corrosion

caused by Other Substances - Chapter 16. Corrosion caused by Chelants (Chelant Corrosion) - Chapter 17. Caustic Embrittlement and Caustic Gouging - Chapter 18. Hydrogen Embrittlement - Chapter 19. Condensate Corrosion - Chapter 20. Preboiler Corrosion - Chapter 21. Economizer Corrosion - Chapter 22. Super Heater and Turbine Corrosion - Chapter 23. Foaming, Priming & Carryover - PART - III. WATER QUALITY REQUIREMENTS AND TREATMENT PROGRAMS - Chapter 24. Quality Requirements for Feed Water and Boiler Water - Chapter 25. Objectives of Boiler Water Treatment - Chapter 26. External Treatment and Internal Treatment - Chapter 27. Water Treatment programs - Guidelines - PART - IV. EXTERNAL TREATMENT - Chapter 28. External Treatment - A Prelude - Chapter 29. Coagulation (Removal of Color, Turbidity and Suspended Matter) - Chapter 30. Filtration - Chapter 31. Softening by Chemical Method (Lime - Soda Softening) - Chapter 32. Ion Exchange Resins and Treatment Methods - Chapter 33. Softening by Ion-Exchange Method - Chapter 34. Dealkalization - Chapter 35. Demineralization (Deionization) - Chapter 36. Mixed Bed Deionization - Chapter 37. Reverse Osmosis - Chapter 38. Evaporation - Chapter 39. Silica Removal - Chapter 40. Oil Removal - Chapter 41. Condensate Treatment (Condensate Polishing) - Chapter 42. Deaeration (Mechanical Removal of Oxygen) - PART - V. INTERNAL TREATMENT - Chapter 43. Internal Boiler Water Treatment - A Prelude - Chapter 44. Organic Polymers and Their Role as Scale Inhibitors, Dispersants and Sludge Conditioners in Boiler Water Treatment - Chapter 45. Internal Treatment - Chemical Feeding - Chapter 46. Prevention of Scale Formation - Chapter 47. Sludge Conditioning - Chapter 48. Prevention of Corrosion - An Introduction - Chapter 49. Prevention of Corrosion Due to Low pH - Chapter 50. Prevention of Pitting Corrosion Using Oxygen Scavengers (Chemical Removal of Oxygen) - Chapter 51. Prevention of Caustic Embrittlement and Caustic Gouging - Chapter 52. Prevention of Chelant Corrosion - Chapter 53. Prevention of Condensate Corrosion - Chapter 54. Prevention of Pre-Boiler Corrosion - Chapter 55. Prevention of Economizer Corrosion - Chapter 56. Prevention of Foaming, Priming & Carryover - Chapter 57. Prevention of Silica Carryover - Chapter 58. Boiler Blow Down - PART - VI. BOILER WATER TREATMENT - IMPORTANT CALCULATIONS - Chapter 59. Basic Conversion Factors - Chapter 60. Water Softening - Calculations - Chapter 61. Cycles of Concentration, Blowdown, Feed Water and Makeup Water - Calculations - Chapter 62. Determination of Dosage of Chemicals - PART - VII. BOILER START UP, CLEANING, LAY UP AND MAINTENANCE - Chapter 63. Boiler Startup (Pre-operational Cleaning) - Chapter 64. Descaling and Boiler Cleaning - Chapter 65. Boiler LayUp - Chapter 66. Boiler Maintenance - PART - VIII. CHEMICALS HANDLING, SOLUTION PREPARATION AND FEEDERS - Chapter 67. Chemicals Handling and Storage - Chapter 68. Preparation of Solutions and Suspensions - Chapter 69. Chemical Feeders - PART - IX. ANALYSIS OF WATER AND STEAM - See Website for full Table of Contents  
[www.chemical-publishing.com](http://www.chemical-publishing.com)  
**Water Treatment Principles and Design** IWA Publishing  
 This unique volume provides a comprehensive overview of all the major



aspects of modern drinking water systems in the western European context. It not only covers the theoretical principles, but also the historical background and practical aspects of design and operation, legislation, planning and finance of drinking water supply in its social and economic context. The principles and practices are illustrated using experiences from The Netherlands. The Dutch drinking water supply is well known for its multiple barrier systems and high technical standards. The Dutch drinking water is of high quality and does not contain chlorine, and the Dutch therefore readily drink tap water and do not see the need to buy bottled water or in-house filters, with their drawbacks on national economics, public health and the environment. This illustrative overview can be used as a reference for other countries and regions.

*Drinking Water and Health, Volume 7*

Chemical Publishing Company

Over the past twenty years, the knowledge and understanding of wastewater treatment has advanced extensively and moved away from empirically based approaches to a fundamentally-based first principles approach embracing chemistry, microbiology, and physical and bioprocess engineering, often involving experimental laboratory work and techniques. Many of these experimental methods and techniques have matured to the degree that they have been accepted as reliable tools in wastewater treatment research and practice. For sector professionals, especially a new generation of young scientists and engineers entering the wastewater treatment profession, the quantity, complexity and diversity of these new developments can be overwhelming,

particularly in developing countries where access to advanced level laboratory courses in wastewater treatment is not readily available. In addition, information on innovative experimental methods is scattered across scientific literature and only partially available in the form of textbooks or guidelines. This book seeks to address these deficiencies. It assembles and integrates the innovative experimental methods developed by research groups and practitioners around the world. *Experimental Methods in Wastewater Treatment* forms part of the internet-based curriculum in wastewater treatment at UNESCO-IHE and, as such, may also be used together with video records of experimental methods performed and narrated by the authors including guidelines on what to do and what not to do. The book is written for undergraduate and postgraduate students, researchers, laboratory staff, plant operators, consultants, and other sector professionals.

**Experimental Methods in Wastewater Treatment** IWA Publishing

A comprehensive and up to date survey of the science and technology of polymeric dispersions. The book discusses the kinetics and mechanisms of polymerization in dispersed media, examines the processes controlling particle morphology, presents both off-line and on-line methods for the characterization of polymer colloids, considers reactor engineering and control, and covers a wide variety of applications, such as latex paint formulations, encapsulation of inorganic particles, reactive latexes, adhesives, paper coating, and biomedical and pharmaceutical applications. Audience: A

valuable resource for scientists and engineers, academic and industrial, who are involved in the manufacture or application of polymeric dispersions.

**Cooling Towers** Createspace  
Independent Pub

Those involved in the design, operation, or maintenance of industrial boilers will find this book an invaluable source of information. First the author discusses the relationship between boilers and the generated steam. The prevention of scaling, corrosion, stress corrosion cracking, and steam contamination are fully explored followed by an in-depth examination of the chemical treatments

necessary to implement preventative measures. Specific types of boilers are discussed, water treatment programs and operating guidelines are outlined. Finally, step-by-step procedures are given for testing boiler water for the various contaminants. The clarity and accuracy of presentation allows this book to function as a manual as well as a text. CONTENTS: Principles of Steam Generation; Objectives in Treating Water for Boilers; Physical methods for Improving Water Quality; External Chemical Treatments; Internal Chemical Treatments; Operating Procedures; Complications in the Operation of Boilers: Analytical Methods;