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Nota di contenuto	Risk Analysis of Water Pollution; Contents; Preface to the Second Edition; Preface to the First Edition; 1 Water Resources: Quantity and Quality; 1.1 Water Pollution and Risk Analysis; 1.1.1 A Systemic View of Water Resources; 1.1.1.1 Examples of Application; 1.1.2 The New Paradigm of Water Quality; 1.1.2.1 Human Well-being and Health; 1.1.2.2 Ecological Impacts and Biodiversity; 1.1.2.3 Fishing and Oyster Farming; 1.1.2.4 Tourism; 1.1.2.5 Algal and Chlorophyllic Photosynthesis; 1.1.2.6 Zooplankton Growth; 1.1.2.7 Bacteria; 1.1.3 Integrated Water Resources Management 1.2 Water Pollution in Transboundary Regions 1.2.1 The UNECE Convention (Helsinki, 1992); 1.3 The EU Water Framework Directive; 1.4 Uncertainties in Water Resources Management; 1.5 Environmental Risk Assessment and Management; 1.6 Aim and Organisation of the Book; 1.7 Questions and Problems - Chapter 1; 2 Risk Identification; 2.1 Definition of Risk; 2.2 Typology of Risks and the Precautionary Principle; 2.2.1 Unacceptable versus Acceptable Risks; 2.2.2 Controllable versus Uncontrollable Risks; 2.2.3 Gradual versus Sudden

Risks; 2.2.4 The Precautionary Principle
2.3 Uncertainties in Water Pollution Problems
2.3.1 Aleatory Uncertainties or Randomness; 2.3.2 Epistemic or Man-induced Uncertainties; 2.4 Water Quality Specifications; 2.4.1 Water Quality Standards; 2.4.2 Effluent Standards; 2.5 Probabilistic Risk and Reliability; 2.6 Fuzzy Risk and Reliability; 2.7 Questions and Problems - Chapter 2; 3 Risk Quantification; 3.1 Stochastic Approach; 3.1.1 Direct Evaluation; 3.1.1.1 Margin of Safety; 3.1.1.2 The Safety Factor; 3.1.2 Second-Moment Formulation; 3.1.3 Frequency Analysis of Data; 3.1.3.1 Probability Distribution of Extremes
3.1.3.2 Analysis of Frequency
3.1.4 Stochastic Modelling; 3.1.4.1 Deterministic Modelling; 3.1.4.2 Stochastic Modelling; 3.1.5 Monte Carlo Simulation; 3.2 Fuzzy Set Theory; 3.2.1 Fuzzy Regression; 3.2.1.1 Fuzzy Regression as an Extension of Interval Analysis; 3.2.1.2 Statistical Regression; 3.2.1.3 Interval Regression; 3.2.1.4 Fuzzy Regression; 3.2.2 Fuzzy Modelling; 3.3 Time Dependence and System Risk; 3.3.1 Failure and Reliability Functions; 3.3.2 Failure Rate and Hazard Function; 3.3.3 Expected Life; 3.3.4 System Risk and Reliability; 3.3.4.1 Series Systems; 3.3.4.2 Parallel Systems
3.4 Questions and Problems - Chapter 3
4 Risk Assessment of Environmental Water Quality; 4.1 Risk in Coastal Water Pollution; 4.1.1 Uncertainties in Coastal Water Quality Processes; 4.1.2 Mathematical Modelling; 4.1.2.1 Molecular Diffusion; 4.1.2.2 Turbulent Diffusion; 4.1.2.3 Turbulent Dispersion; 4.1.2.4 Growth Kinetics; 4.1.2.5 Coastal Circulation; 4.1.3 Random Walk Simulation; 4.1.4 Dispersion by Wind-generated Currents; 4.2 Risk in River Water Quality; 4.2.1 Introduction; 4.2.2 Mathematical Modelling and Simulation; 4.2.2.1 Physically Based Mathematical Models
4.2.2.2 Numerical Simulation

Sommario/riassunto

This new edition of a classic text has now been extensively updated to include the latest developments in risk analysis and water quality assessment and management. It takes into account the role of ecological water quality in integrated regional and transboundary water resources management, according to the latest UNESCO programmes and the new EU-Water Framework Directive. This practice-oriented textbook is a unique tool for identifying and evaluating local and regional environmental risks from pollution hazards in groundwater, river water and coastal seawaters. The book explains differ
