

# CONTENTS

Page

Foreword

(vii)

## IMPACT OF INDUSTRY AND AGRICULTURE ON WATER QUALITY

1. MEASURING AND ESTIMATING THE IMPACT OF AGRICULTURAL LAND USE CHANGES ON WATER QUALITY  
*Ralph Meissner, Juliane Seeger, Holger Rupp and Helmut Balla* 3
2. THE IMPACT OF AGRICULTURAL POLLUTANTS IN SIX DRINKING WATER RESERVOIRS  
*A. Tanik, B. Beler Baykal and I.E. Gönenc* 14
3. TOXICOKINETIC ASPECTS OF AGRICULTURAL PESTICIDES ON WETLAND ECOSYSTEMS  
*Berrin Tansel and Shonali Laha* 21
4. EFFLUENT NUTRIENTS MANAGEMENT AND RESOURCE RECOVERY IN INTENSIVE RURAL INDUSTRIES FOR THE PROTECTION OF NATURAL WATERS  
*T.K. Biswas, F.R. Higginson and Ian Shannon* 29
5. EFFECTS OF ACENAPHTHENE (PAH) ON AQUATIC ECOSYSTEM  
*Hinchhalal Dwivedi, S.R. Wate and R. Sarin* 39
6. USE OF JET NOZZLES TO INCREASE ALLOWABLE INDUSTRIAL DISCHARGE CONCENTRATIONS OF SULFATE INTO RIO MAGDALENA, COLOMBIA  
*Venkat Venkatasubbiah, Ken Wood, Keith Ganze, Steve Campbell and John Koon* 45
7. POLLUTION OF THE RIVER MATHABHANAGA-CHURNI IN DISTRICT NADIA (WEST BENGAL) BY SUGAR MILL AND BREWERY EFFLUENTS FROM ACROSS THE BORDER - AN INTERNATIONAL ISSUE  
*Sushil Kanta Konar and Mahadeb Das* 54
8. ECOLOGICAL RISK ASSESSMENT OF THE CHILKA LAKE IN INDIA  
*J.S. Pandey, R. Shanker, S. Mullick, A. Kedar and P. Khanna* 60

## SURFACE WATER QUALITY MANAGEMENT

1. PREDICTIVITY OF DETERMINISTIC AND NEURAL NETWORK MODELS FOR LAKE WATER QUALITY MANAGEMENT  
*Friedrich Recknagel* 71
2. PHOSPHORUS FRACTIONS IN RESERVOIR SEDIMENTS  
*M. Schintu, P. Pin, A. Dessi, P. Meloni and A. Contu* 79
3. VARIATIONS OF SOME TRACE ELEMENTS IN A COASTAL SYSTEM IN MAURITIUS  
*Ramessur R.T., Parry S.J. and Jarvis K.E.* 84
4. REHABILITATION OF THE PASIG RIVER IN MANILA, THE PHILIPPINES - SCOPING, PRIORITIES AND PLANNING  
*Anders Malmgren-Hansen, Mads Madsen and Karsten Havnø* 93

5.	<b>WATER QUALITY MANAGEMENT FOR THE TALKATORA LAKE, JAIPUR - A CASE STUDY</b>	
	<i>Akhilendra B. Gupta, Renu Jain and Kapil Gupta</i>	102
6.	<b>WATER QUALITY SCENARIO IN DAMODAR RIVER BASIN</b>	
	<i>B.K. Mittal, M.S. Gupta and Anupam Prasad</i>	107
7.	<b>MANAGEMENT OF A LAKE CATCHMENT - TOWARDS SUSTAINABILITY</b>	
	<i>M. Chandra Sekhar</i>	115
8.	<b>WATER QUALITY MODELING OF THE YAMUNA RIVER</b>	
	<i>Absar Ahmad Kazmi and Samorn Muttamara</i>	120
9.	<b>BIO DRAINAGE TO PREVENT POLLUTION OF SURFACE WATER FROM IRRIGATION DRAINAGE</b>	
	<i>A.S. Kapoor</i>	129
10.	<b>EVALUATION OF EFFECT OF DISPOSAL OF WASTE TO TUNGA RIVER WATER ADJOINING GROUND WATER</b>	
	<i>Ravindranath Sabahita and A.V. Pradeep Kumar</i>	138
11.	<b>WATERSHED MANAGEMENT IN GERMANY AND THE UNITED STATES : A COMPARISON</b>	
	<i>Russell A. Isaac</i>	148
12.	<b>CASE STUDY ON WATER QUALITY MODELLING OF DIANCHI LAKE YUNNAN PROVINCE, SOUTH WEST CHINA</b>	
	<i>Wang Li and AV Gray</i>	156
13.	<b>WATER QUALITY AND WATER RESOURCES MANAGEMENT FOR CHEMICAL AND PROCESS INDUSTRIES</b>	
	<i>G. Saha</i>	166

#### **GROUNDWATER CONTAMINATION ISSUES**

1.	<b>THE EFFECTS OF WASTEWATER IRRIGATION ON GROUNDWATER QUALITY IN MEXICO</b>	
	<i>Elvia Gallegos, Alan Warren, Esperanza Robles, Emelia Campoy, Arturo Calderon, MA. Guadalupe Sainz, Patricia Bonilla and Oscar Escolero</i>	173
2.	<b>INLAND SALINITY AND CHALLENGES ON WATER QUALITY MANAGEMENT IN HARYANA (INDIA)</b>	
	<i>B.S. Tanwar</i>	182
3.	<b>DENITRIFICATION OF GROUNDWATER USING ACETIC ACID AS A CARBON SOURCE</b>	
	<i>A. Mohseni-Bandpi, D.J. Elliott and A. Momeny-Mazdeh</i>	192
4.	<b>GROUNDWATER QUALITY DETERIORATION CAUSED BY LANDFILL LEACHATE INTRUSION</b>	
	<i>D. Fatta, M. Loizidou, I. Vei and M. Scoullas</i>	199

5. GROUNDWATER POLLUTION OF THE VILLAGES SITUATED ON THE BANKS OF THE MUSI RIVER IN RANGA REDDY DISTRICT, ANDHRA PRADESH, INDIA  
*R. Partha Sarathy, A. Sateesh and M.V.S.R.K. Murthy* 206
6. IMPACT OF RIVER POLLUTION ON GROUNDWATER QUALITY AT PUNE  
*M.R. Gidde, S.K. Gajendragadkar and Mridula Deshpande* 213
7. PREFERENTIAL WATER AND SOLUTE MOVEMENT ALONG INTERFACE OF SOIL HORIZONS IN A TILE-DRAINED FIELD  
*J. Michaelsen, S.K. Kamra, W. Wichtmann and P. Widmoser* 222
8. DETERIORATING GROUND WATER QUALITY AND ITS IMPLICATIONS  
*Kamal Mazumdar* 230
9. WATER QUALITY EFFECTS ON CAPILLARY RISE IN SOILS OF DIFFERENT TEXTURES  
*R. Singh and S.K. Gupta* 234

#### **DRINKING WATER QUALITY MANAGEMENT**

1. ARSENIC IN DRINKING WATER - PROBLEMS AND SOLUTIONS  
*T. Viraraghavan, K.S. Subramanian and J.A. Aruldoss* 245
2. DRINKING WATER SUPPLY THROUGH RO DESALINATION PLANTS IN RAMANATHAPURAM DISTRICT OF TAMIL NADU, INDIA  
*M.H. Ansari, P.S. Kelkar, M.Z. Hasan and R. Paramasivam* 254
3. WATER QUALITY SURVEILLANCE AND MONITORING IN THE KUMAON REGION OF U.P. HILLS - A CASE STUDY  
*V.K. Sinha* 266
4. H<sub>2</sub>S PAPER STRIP METHOD - A BACTERIOLOGICAL TEST FOR FAECAL COLIFORMS IN DRINKING WATER AT VARIOUS TEMPERATURES  
*J. Pillai, K. Mathew, R. Gibbs and G.E. Ho* 277
5. EVALUATION OF GROUNDWATER QUALITY IN IZMIR FOR DIFFERENT PURPOSES  
*Aysen Türkman* 284
6. DRINKING WATER QUALITY MANAGEMENT IN INDIA : ISSUES AND REMEDIAL MEASURES  
*A.K. Susheela* 292
7. EVALUATION OF THE IMPACT OF CHLORINATION, CHLORAMINATION AND OZONATION PROCESSES ON BACTERIAL REGROWTH IN POTABLE WATER DISTRIBUTION SYSTEMS  
*Maggy N.B. Momba, T.E. Cloete, S.N. Venter and R. Kfir* 301
8. CASCADE AIR-STRIPPING PROCESS FOR REMOVAL OF SEMI-VOLATILE ORGANIC CONTAMINANTS FROM DRINKING WATER : ECONOMIC EVALUATION  
*G.L. Peace, N. Nirmalakhandan and R.A. Brennan* 311

9. ANALYTICAL STUDY ON THE PERCENTAGE (%) OF FLUORIDE CONTENT IN DRINKING WATER SAMPLES OF PRAKASAM AND WARANGAL DISTRICTS OF ANDHRA PRADESH

*K. Padmaja*

319

#### USE OF LOW QUALITY/WASTE WATERS

1. NITRATE LEACHING FROM A MUNICIPAL SEWAGE IRRIGATED SOIL IN NEW ZEALAND

*Gujja Magesan, Chris McLay and Vijendra Lal*

331

2. GREYWATER TREATMENT AND REUSE

*Stewart Dallas, Kuruvilla Mathew, Martin Anda and Goen Ho*

338

3. A PONDING IRRIGATION SYSTEM TO RECYCLING AND USE OF RETURNING AGRICULTURAL WASTEWATER FOR IRRIGATION

*Paris Honglay Chen, Chiu-Yang Chen and Christina H. Jenq*

345

4. OVERVIEW OF WATER ENVIRONMENT PRIORITIES IN HONG KONG

*H. Chua and W. Lo*

353

5. IRRIGATION WATER QUALITY AND FARM MANAGEMENT DECISIONS

*O.D. Kuchanwar, C.K. Kale and V.P. Deshpande*

361

6. EFFECT OF PHYSICAL DILUTION OF SEWAGE EFFLUENT ON THE SURVIVAL OF FAECAL COLIFORMS IN SANDY LOAM SOIL COLUMNS

*J.B. Siakantu and T.C.D. Manby*

369

7. MUNICIPAL WASTEWATER TREATMENT, DISPOSAL AND POTENTIAL FOR REUSE IN GREECE

*K.P. Tsagarakis, D.D. Mara and A.N. Angelakis*

373

8. LAND APPLICATION OF WASTE WATERS FROM DISTILLERIES : PROBLEMS AND PROSPECTS

*H.C. Joshi, N. Kalra, R. Choudhary and A. Chaudhary*

381

9. PHYSICO - CHEMICAL MEASUREMENTS AND CONCEPTUALISED RECYCLE AND REUSE OPTIONS FOR WASTE-WATER MANAGEMENT OF COAL BASED THERMAL POWER PLANTS

*Satendra K. Jain*

389

10. ENTEROVIRUS DETECTION FROM WASTEWATER BY RT-PCR AND CELL CULTURE

*C. Gantzer, S. Senouci, A. Maul, Y. Levi and L. Schwartzbrod*

399

11. ON FARM MANAGEMENT OF POOR QUALITY DRAINAGE WATER

*D.P. Sharma*

405

12. FERTILIZING VALUE AND POLLUTING LOAD OF RECLAIMED WATER IN TUNISIA

*Akissa BAHRI*

415

13. ECONOMICAL REUSE TECHNOLOGY OF CITY WASTE WATERS OF PUNJAB FOR IRRIGATION  
*R.P. Chatrath, Mahinder Kumar and R.K. Mehra* 425
14. STRATEGIC USE OF BRACKISH WATER FOR FRUIT CROPS  
*P.S. Minhas and S.K. Dubey* 431
15. SUSTAINABLE USE OF POOR QUALITY WATER WITH PROPER SCHEDULING OF IRRIGATION AND NITROGEN LEVELS TO RICE CROP  
*D.K. Sharma and D.R. Sharma* 441

#### **WATER QUALITY IMPROVEMENT METHODS, TECHNIQUES AND TECHNOLOGIES**

1. STUDY OF TRANSPORT OF CONTAMINANTS IN A PIPE NETWORK USING MODEL EPANET  
*Niranjanie Ratnayake and Indunil N. Jayatilake* 447
2. NUTRIENT REMOVAL MECHANISMS IN CONSTRUCTED WETLANDS AND SUSTAINABLE WATER MANAGEMENT  
*K. Sakadevan and H.J. Bavor* 455
3. EVOLUTION OF WATER AVAILABILITY FOR SELECTED USES IN MEXICO, IN TERMS OF QUANTITY AND QUALITY  
*Blanca Jiménez and Judith Ramos Y Héctor Garduño* 464
4. NUMERICAL SOLUTIONS FOR 2-D DISPERSION WITH VARIABLE INPUTS THROUGH POROUS MEDIA  
*M.V.S. Raju* 474
5. TREATMENT OF LOW-STRENGTH ORGANIC CONTAMINANTS USING ADSORPTION-ANAEROBIOSIS TECHNIQUES  
*H. Chua and W. Lo* 483
6. A GRID MODEL FOR NITRATE TRANSPORT IN RUNOFF  
*F. Preti and B. Mazzanti* 490
7. ASSESSMENT OF POLLUTION OF THE RIVER BURIGANGA, BANGLADESH USING A WATER QUALITY MODEL  
*Mir Mostafa Kamal, Anders Malmgren-Hansen and A.B.M. Badruzzaman* 500
8. POLYELECTROLYTE TREATMENT - AN APPROACH FOR WATER QUALITY IMPROVEMENT  
*D. Rout, R. Verma and S.K. Agarwal* 510
9. AMMONIUM (NH<sub>4</sub><sup>+</sup>) REMOVAL FROM SECONDARY EFFLUENT THROUGH ION-EXCHANGE AND THE EFFECT OF BIOLOGICAL ACTIVITY AND THE PRESENCE OF OTHER CATIONS ON THE PROCESS  
*McVeigh, Ryan and Weatherley, Laurence* 518
10. MATHEMATICAL MODELLING - A TOOL FOR COASTAL WATER QUALITY MANAGEMENT  
*A.U. Mahajan, C.V. Chalapatirao and S.K. Gadkari* 526

11. THE REQUIREMENT OF METAL CATIONS FOR ENHANCED BIOLOGICAL PHOSPHORUS REMOVAL BY ACTIVATED SLUDGE  
*Vikram M. Pattarkine and Clifford W. Randall* 534
12. DEVELOPMENT OF NEW LOW COST DEFLUORIDATION TECHNOLOGY (KRASS)  
*Kailash C. Agarwal, Sunil Kr. Gupta and Akhilendra B. Gupta* 542
13. NUMERICAL MODELING OF CONTAMINANT TRANSPORT IN AQUIFER SYSTEMS  
*A.K. Mohamad and A.K. Rastogi* 549

#### **PAPERS FOR POSTER PRESENTATION**

1. IN SITU BIODEGRADATION IN ORGANICALLY-CONTAMINATED AQUIFERS : HOW IMPORTANT ARE PROTISTS?  
*G. Novarino, A. Warren and N.E. Kinner* 561
2. ENVIRONMENTAL ASPECTS OF GROUNDWATER QUALITY AND ITS STATUS IN INDIA  
*R.G. Ayade* 562
3. GROUNDWATER VULNERABILITY MAP OF BHANDARA DISTRICT (M.S.), INDIA  
*Devendra Pandey, R.P. Singh and S. Shekhar Babu* 563
4. MONITORING OF ENVIRONMENTAL IMPACT ON GROUNDWATER QUALITY IN GUJARAT  
*R.M. Purohit* 564
5. FORMIDABLE QUALITY CONSTRAINTS OF GROUND WATER AND MISERIES OF RURAL PEOPLE OF DESERT ZONE OF RAJASTHAN  
*D.D. Ozha, D.C. Sharma and P.C. Jain* 565
6. VERTICAL ELECTRO SOUNDING TECHNIQUE FOR PREDICTING GROUND WATER QUALITY  
*B.D. Vyas* 566
7. ENVIRONMENTAL IMPACT OF LIME STONE MINING ON WATER REGIME OF SIRMUR DISTRICT IN HIMACHAL PRADESH - A CASE STUDY  
*R.K. Tiwary and B.B. Dhar* 567
8. SENSITIVITY OF CONJUNCTIVE USE PLANNING MODEL WITH REFERENCE TO SALINITY THRESHOLD VALUES  
*P.M.Soni and M.B. Joshi* 568
9. IMPROVEMENT OF RIVER WATER QUALITY - A CASE STUDY  
*S.K. Chakrabarti, Vishal Jaitley, R.K. Kapoor, Sarabjeet Singh, M.Roy, Sandip Chandra and P.K. Bajpai* 570
10. STRATEGIES FOR CROP PRODUCTION WITH POOR QUALITY WATERS  
*S.K. Gupta* 572

11.	<b>ORGANOCHLORINATED COMPOUNDS CONCENTRATION CONTROL IN DISTRIBUTION SYSTEMS</b>	
	<i>M. Kanoh, C. Zhu, M. Ukita, T. Sekine, T. Imai and T. Kuroki</i>	573
12.	<b>PRACTICAL SOLUTION FOR CSO FACILITIES</b>	
	<i>Thomas Gigerl and Karl-Heinz Rosenwinkel</i>	577
13.	<b>INHIBITION OF NITRIFICATION IN SWEDEN</b>	
	<i>Karin Jönsson and Jes la Cour Jansen</i>	582
14.	<b>SEASONAL VARIATIONS IN THE QUALITY OF GROUNDWATER</b>	
	<i>B.R. Yadav, S.P.S. Tomar and H. Chandrasekharan</i>	583