TABLE OF CONTENT

CHAPTER 1	WATER QUALITY MANAGEMENT: WESTERN EXPERIENCES AND CHALLENGES FOR CENTRAL AND FASTERN FUROPEAN	
	COUNTRIES	1
	(Vladimir Novotny and László Somlyódy)	•
1. IN	TRODUCTION AND BACKGROUND	1
2. PC	DLLUTION CONTROL IMPERATIVES	6
3. ST	ANDARDS FOR POLLUTION CONTROL	10
4. W	ATER POLLUTION CONTROL IN THE U.S.	14
5. Cl	IALLENGES TO CEE COUNTRIES	22
6. IN	STITUTIONS	27
7. Cl	LOSING REMARKS	32
REFE	RENCES	34
CHAPTER 2	USE OF WATER QUALITY MODELS	35
	(Vladimir Novotny and Andrea Capodaglio)	
1. W	HY AND WHEN WATER QUALITY MODELING IS NEEDED	35
2. TH	IE WASTE LOAD ALLOCATION PROCESS	36
3. W	ATER QUALITY MODELS AND THEIR APPLICATION	45
4. SE	LECTION AND APPLICATION CRITERIA FOR WATER FLOW AND	
QL	ALITY MODELS	57
5. M	ODELING SCENARIOS IN THE WLA (TMDL) PROCESSES	65
REFE	RENCES	70
CHAPTER 3	MODELS FOR RESERVOIRS, LAKES AND WETLANDS (Milan Straškraba)	73
1. IN	TRODUCTION	73
2. EC	O-TECHNOLOGICAL ASPECTS OF WATERSHED MANAGEMENT	74
3. M.	ATHEMATICAL MODELS FOR RESERVOIR WATER QUALITY	
М	ANAGEMENT	79
4. M	ODEL CATEGORIZATION ACCORDING TO WATER QUALITY	
PH	OBLEMS AND MANAGEMENT OPTIONS FOR THEIR SOLUTION	84
5. M	DDELS FOR POLLUTION SOURCES	87
6. M	DDELS FOR POLLUTION CONSEQUENCES FOR LAKES AND	
		96
7. W.	ALEKSHED MANAUEMENI ALIEKNAIIVES	108
ð. M	JUELS FUR IN-LARE AND IN-RESERVOIR MANAGEMENT	117
A	LIEKNA IIVES	113

9. MODELS FOR QU	ALITY MANAGEMENT OF RESERVOIR OUTFLOW	115
10. MODELS FOR PR	EDICTION OF THE EFFECT OF AN IMPOUNDMENT	115
ON WATER QUA	LITY OF ITS OUTFLOW	116
11. WETLAND MANA	AGEMENT MODELS	117
12. INTEGRATED (RI	EAL TIME) MANAGEMENT OF A LAKE, RESERVOIR	
OR WETLAND		117
13. RESEARCH NEED	DS FOR ECOTECHNOLOGICAL WATER QUALITY	
MODELS		121
14. CONCLUSIONS		123
KEFEKENCES		120
CHAPTER 4 MODELING 1	FOXIC CONTAMINANTS IN AN AQUATIC	
ENVIRONME	NT	157
(Sven E. Jørger	nsen)	
1. USE OF TOXIC SU	UBSTANCE MODELS	157
2. IMPORTANT PRO	CESSES FOR CONTAMINANTS IN AN AQUATIC	
ECOSYSTEM		159
3. CHARACTERISTIC	C FEATURES AND CLASSIFICATION OF	
ECOTOXICOLOG	ICAL MODELS	173
4. AN OVERVIEW O	OF TOXIC SUBSTANCE MODELS FOR AQUATIC	194
UVERVIEW	A MEDCURY MODEL FOR MEY DAY ALEYANDRIA	104
J. A CASE STUDI: A	A MERCURI MODEL FOR MEA BAI, ALEAANDRIA	185
6 SUMMARY AND	CONCLUSIONS	192
REFERENCES		193
CHAPTER 5 SEDIMENT T	OXICITY AND EQUILIBRIUM PARTITIONING	
DEVELOPME	INT OF SEDIMENT QUALITY CRITERIA FOR	107
TOXIC SUBS	TANCES	197
(Dominic M. L	moro and Laura D. Dekosa)	
1 INTRODUCTION		197
2. TOXICITY AND E	BIOAVAILABILITY OF NONIONIC ORGANIC	
CHEMICALS IN S	SEDIMENTS	198
3. TOXICITY AND E	BIOAVAILABILITY OF METALS IN SEDIMENTS	216
REFERENCES		227
CHAPTER 6 CONTAMINA	ATED SEDIMENTS AND REMEDIATION-	
GEOCHEMIC	AL PERSPECTIVE	231
(Ulrich Förstne	37)	
1. INTRODUCTION		231
2. IDENTIFICATION	OF SOURCES AND TEMPORAL DEVELOPMENTS	232
3. SEDIMENT QUAI	LITY CRITERIA	233
4. REMEDIATION P	ROCEDURES FOR DREDGED SEDIMENTS	241
KEFEKENCES		250

CHAPTER 7 ASSESSMENT AND IMPACT OF LARGE SCALE METAL		
POLLUTED SITES	255	
1. INTRODUCTION	255	
2. CAPACITY AND INTENSITY CONTROLLING PARAMETERS	257	
3. CASE STUDIES		
REFERENCES	286	
CHAPTER 8 GROUNDWATER REMEDIATION AND MODELING	291	
(Peter Shanahan)		
1. INTRODUCTION	291	
2. GROUNDWATER CONTAMINATION	292	
3. GROUNDWATER REMEDIATION	295	
4. GROUNDWATER MODELING	299	
5. MODELING CASE STUDIES	318	
REFERENCES	332	
APPENDIX: Sources for Computer Programs	336	
CHAPTER 9 WASTEWATER TREATMENT TECHNOLOGY, ECONOMY AND		
POLITICS (Petr Grav)	339	
	220	
	220	
3 I ESS EVDENSIVE TECHNOLOGIES	339	
4 CONCLUSIONS	251	
DEFEDENCES	352	
APPENDIX 1	354	
CHAPTER 10 WASTEWATER TREATMENT PROCESS DEVELOPMENT IN		
CENTRAL AND EASTERN EUROPE-STRATEGIES FOR A		
STEPWISE DEVELOPMENT INVOLVING CHEMICAL AND		
BIOLOGICAL TREATMENT	357	
(Mogens Henze and Hallvard Ødegaard)		
1. INTRODUCTION	357	
2. WASTEWATER MANAGEMENT	358	
3. WASTEWATER TREATMENT METHODS FOR EASTERN AND CENTRAL		
EUROPE	360	
4. SELECTION OF LOCAL WASTEWATER TREATMENT STRATEGY	365	
5. ECONOMY	371	
6. STEP-WISE DEVELOPMENT OF WASTEWATER TREATMENT PLANTS	375	
7. DISCUSSION	380	
8. CONCLUSIONS	380	
9. SUMMARY	382	
KEFEKENCES	382	

CHAPTER 11 FACTORS AFFECTING WATER QUALITY OF (LARGE) RIVERS -PAST EXPERIENCES AND FUTURE OUTLOOK Part I: Present Views and State-of-the-Art (Hermann H. Hahn and Neithard Müller)	385	
1. INTRODUCTION	385	
2. PRESENT VIEW-THE SITUATION OF THE RIVER NECKAR AND ITS RELEVANCE FOR OTHER RIVER SYSTEMS 3. FUTURE OUTLOOK-WHICH FACTORS ARE STILL RELEVANT AND	386	
WHICH HAVE EMERGED AS NEW? 4 CONCLUSIONS-WHAT DEVELOPMENTS HAVE ALREADY BEGUN TODAY	395	
AND WHAT IS TO BE DONE TOMORROW REFERENCES	402 403	
Part II: Future Outlook (Neithard Müller and Hermann H. Hahn)	405	
1. INTRODUCTION 2. INCREASE OF FUTURE KNOWLEDGE BY MODEL APPLICATION OR	405	
SCIENTIFIC RESEARCH REFERENCES		
CHAPTER 12 RIVER BASIN WATER QUALITY MANAGEMENT STRATEGIES IN THE CENTRAL EUROPEAN REGION: AN EXAMPLE OF THE NITRA RIVER (SLOVAKIA) (L. Somlyódy, I. Masliev and M. Kularathna)	427	
1. INTRODUCTION 2. EMISSIONS AND WATER QUALITY SITUATION IN THE NITRA RIVER	427	
BASIN	430	
3. MODELING EFFORT	432	
4. MUNICIPAL WASTE WATER TREATMENT ALTERNATIVES	436	
5. WATER QUALITY CONTROL POLICIES 6. THE IMPACT OF THE MODEL UNCERTAINTIES ON THE SELECTION	438	
OF CONTROL STRATEGIES: REGRET ANALYSIS APPROACH 7. THE IMPACT OF THE MODEL UNCERTAINTIES ON THE SELECTION OF CONTROL STRATEGIES: A POSTERIORI MONTE CARLO	443	
SIMULATION	448	
8. POLICY RECOMMENDATIONS	452	
9. CONCLUSIONS	454	
REFERENCES	455	
CHAPTER 13 THE STATE OF THE ART IN ECONOMIC INSTRUMENTS AND INSTITUTIONS FOR WATER QUALITY MANAGEMENT (Mark Griffin Smith)	459	
1. INTRODUCTION	459	

1. SUMMARY OF WORKSHOP PRESENTATIONS 2. CONCLUSIONS AND RECOMMENDATIONS	505 508
CHAPTER 15 SUMMARY AND CONCLUSIONS	505
REFERENCES	502
6. RESEARCH POSSIBILITIES	498
5. CEE INSTITUTIONAL TRENDS	496
4. RECENT DEVELOPMENTS	496
3. APPLICA ON IN THE OECD	494
2 POLICY RESEARCH TO DATE	409
	490
(Charles M. Paulsen)	
QUALITY: INSTITUTIONAL CHANGES AND RESEARCH CHALLENGES	489
CHAPTER 14 USE OF ECONOMIC INSTRUMENTS TO ENHANCE CEE WATER	
REFERENCES	486
8. CONCLUSIONS AND RESEARCH IMPLICATIONS	482
7. THE EVOLVING INSTITUTIONAL CONTEXT	479
WATER QUALITY MANAGEMENT	477
6. CROSS CUTTING THEMES IN INCENTIVE-BASED APPROACHES TO	405
J. ECONOMIC INSTRUMENTS EVALUATED: CONCEPTUAL ISSUES AND DRACTICAL EXDEDIENCE	165
4. THE INSTRUMENTS	463
3. ECONOMIC INSTRUMENTS: EFFICIENCY AND EQUITY PROPERTIES	461
2. FIRST PRINCIPLES	460