

CONTENTS

Preface	xi
PART I CHEMICAL ENGINEERING FUNDAMENTALS	1
Chapter 1 Units and Dimensions (UAD)	3
Chapter 2 Conservation Law for Mass (CMA)	14
Chapter 3 Conservation Law for Energy (CLE)	28
Chapter 4 Conservation Law for Momentum (CLM)	43
Chapter 5 Stoichiometry (STO)	58
PART II CHEMICAL ENGINEERING PRINCIPLES	73
Chapter 6 Fluid Flow (FFL)	75
Chapter 7 Heat Transfer (HTR)	92
Chapter 8 Mass Transfer Operations (MTO)	108
Chapter 9 Thermodynamics (THR)	147
Chapter 10 Chemical Kinetics (KIN)	171
Chapter 11 Process Control (CTR)	204
Chapter 12 Process Design (PRD)	242

PART III AIR POLLUTION CONTROL EQUIPMENT	265
Chapter 13 Fluid Particle Dynamics (FPD)	267
Chapter 14 Mechanical Collectors (MCC)	284
Chapter 15 Electrostatic Precipitators (ESP)	306
Chapter 16 Baghouses (BAG)	323
Chapter 17 Venturi Scrubbers (VEN)	341
Chapter 18 Hybrid Systems (HYB)	359
Chapter 19 Combustion (CMB)	371
Chapter 20 Absorption (ABS)	392
Chapter 21 Adsorption (ADS)	414
 PART IV SOLID WASTE	 439
Chapter 22 Regulations (REG)	441
Chapter 23 Characteristics (CHR)	456
Chapter 24 Nuclear/Radioactive Waste (NUC)	464
Chapter 25 Superfund (SUP)	475
Chapter 26 Municipal Waste (MUN)	487
Chapter 27 Hazardous Waste Incineration (HWI)	505
Chapter 28 Hospital/Medical Waste (MED)	521
 PART V WATER QUALITY AND WASTEWATER TREATMENT	 537
Chapter 29 Regulations (REG)	539
Chapter 30 Characteristics (CHR)	548
Chapter 31 Water Chemistry (WCH)	562

Chapter 32	Physical Treatment (PHY)	574
Chapter 33	Biological Treatment (BIO)	592
Chapter 34	Chemical Treatment (CHM)	616
Chapter 35	Sludge Handling (SLU)	631
Chapter 36	Water Quality Analysis (WQA)	640
PART VI	POLLUTION PREVENTION	657
Chapter 37	Source Reduction (RED)	659
Chapter 38	Recycle/Reuse (RCY)	680
Chapter 39	Treatment (TRT)	694
Chapter 40	Ultimate Disposal (ULT)	706
Chapter 41	Energy Conservation (ENC)	718
Chapter 42	Domestic Applications (DOM)	733
PART VII	HEALTH, SAFETY, AND ACCIDENT MANAGEMENT	743
Chapter 43	Toxicology (TOX)	745
Chapter 44	Health Risk Analysis (HRA)	758
Chapter 45	Hazard Risk Analysis (HZA)	776
Chapter 46	Hazard Risk Assessment (HZR)	800
Chapter 47	Industrial Applications (IAP)	817
PART VIII	OTHER TOPICS	835
Chapter 48	Dispersion (DSP)	837
Chapter 49	Noise Pollution (NOP)	858

Chapter 50	Economics (ECO)	867
Chapter 51	Ethics (ETH)	883
Chapter 52	Statistics (STT)	902
Chapter 53	Indoor Air Quality (IAQ)	917
Chapter 54	ISO 14000 (ISO)	923
Chapter 55	Measurements (MEA)	928
Index		942