CONTENT

		Page
Prefa		xii
ACK	nowledgments	XV
1.	Introduction to Industrial Fire Protection and Prevention Historical Notes United States Fire Losses Industrial Fire Prevention and Protection Industrial Fire Problem Areas Firesafety Regulations Industrial Fire Protection considerations Staffing Summary Bibliography	1 1 5 7 7 16 19 20 22 23
2.	Characteristics and Behavior of Fire Fire Triangle The Chain Reaction Glowing combustion Heat Transfer Products of Combustion Fire Extinguishment Summary Bibliography	25 25 31 32 33 37 42 44 45
3.	The Fuels Introduction Combustible Solids Plastics Fibers and Textiles Liquids Gases Summary, Ignition of Fuels Combustibility Tests Summary Bibliography	46 46 46 50 55 57 61 61 64
4.	Flammable and Combustible Liquids Terminology Ignition Sources Classification Systems Aerosols Storage of Flammable Liquids Storage Quantities Bulk Storage of Flammable Liquids Summary Bibliography	66 67 71 76 79 80 85 87 89
5.	Building Fire Safety Introduction Building Fire Hazards Objectives of Firesafe Construction and Design Fire control Construction	91 91 93 94 100

	Control of Smoke and Fire Gases Methods of Smoke and Gas Control Simplified Fire Fighting Elements of building Firesafety Other Building Firesafety Factors Summary Bibliography	108 110 112 113 115 115
6.	Life Safety The Life Safety Code Occupancies Goals of the Life Safety Code Means of Egress Psychological effects of Life Safety High-Rise Life Safety Joelma Building, Sao Paulo, Brazil Summary Bibliography	118 118 119 120 128 132 136 140 141
7.	Fire Detection and Alarm Systems Heat Detectors Smoke Detection Flame Detectors Addressable Analog Detector System Selecting the Detection System Location, Installation, and Maintenance of Detectors Protective Signaling Systems Summary Bibliography	143 144 148 158 162 162 164 165 167
8.	Fire extinguishing Agents Classification of Fires Water Dry Chemical Extinguishing Agents Carbon Dioxide Combustible Metal Extinguishing Agents Foam Extinguishing Agents Halogenated Agents Summary Bibliography	169 169 170 174 176 177 178 180 184
9.	Fire Extinguishing Systems and Equipment Portable Fire Extinguishers Automatic Sprinkler Systems Automatic Sprinklers Standpipe and Hose systems Water spray Fixed Systems Fixed Fire Extinguishing Systems Summary Bibliography	188 188 201 209 213 216 217 220 221
10.	Explosions Explosion Description Terminology Factors Affecting Severity of Explosions Boiling Liquid, Expanding Vapor Explosion Unconfined Vapor cloud Explosion Dust Explosions Explosion Prevention Explosion Protection Summary	222 224 226 227 229 230 231 233 238 242

	Bibliography	243
11.	Hazardous Materials	245
	Introduction	245
	Federal Legislation	246
	Codes / Standards Regulating Hazardous Materials	254
	Hazardous Materials Defined	255
	Identification of Hazardous Materials	262
	Storage of Hazardous Materials	267
	Transportation of Hazardous Materials	271
	Summary	278
	Bibliography	279
12.	Hazardous Materials Emergencies	280
	The Development of response Capabilities	281
	Legislation	285
	NFPA Standards	288
	Types of Hazardous Materials Emergencies	290
	The Industrial Hazardous Materials Emergency Program	291
	Technical Assistance in Hazardous Materials Emergencies	302
	Summary	303
	Bibliography	304
13.	Industrial Fire Prevention and Protection	305
	Introduction	305
	Sources of Ignition	306
	Industrial Fire Hazards	310
	Computer Room Protection	311
	Fire Causes	312
	Warehouse Protection	315
	Spray Finishing and Coating Operation	321
	Metal and Metal Products	323
	Wood, Paper, and Related Products	327
	Summary	332
	Bibliography	332
14.	The Industrial Fire Prevention and Protection Program	334
	Industrial Fire Prevention	335
	Industrial Fire Protection	344
	The Fire Prevention and Protection Organization	344
	The Emergency Plan	348
	Fire Prevention and Protection Program Audit	350
	Summary	351
	Bibliography	351
15.	Loss Prevention Resources	352
	Introduction	352
	Fire Insurance Companies	352
	National Fire Protection Association	358
	Consultants	361
	Fire Prevention Codes	363
	Other code-Related and Standard Setting Organizations	364
	The Independent Testing Laboratory	365
	The Public Fire Department	367
	Vendors and manufacturer Representatives	367
	Summary	368
	Bibliography	368
Glos	ssary	370
Index		377