

# Fundamentals of Emergency Management

Michael K. Lindell

Carla S. Prater

Ronald W. Perry

with a contribution by

William C. Nicholson

15 July, 2006

## Table of Contents

Chapter 1: Introduction to Emergency Management.....	1
Chapter 2: Emergency Management Stakeholders.....	33
Chapter 3: Building an Effective Emergency Management Organization.....	60
Chapter 4: Risk Perception and Communication.....	84
Chapter 5: Principal Hazards in the United States.....	120
Chapter 6: Hazard, Vulnerability, and Risk Analysis.....	153
Chapter 7: Hazard Mitigation.....	192
Chapter 8: Myths and Realities of Household Disaster Response.....	221
Chapter 9: Preparedness for Emergency Response.....	244
Chapter 10: Organizational Emergency Response.....	275
Chapter 11: Community Disaster Recovery.....	308
Chapter 12: Emergency Management Standards and Evaluations.....	346
Chapter 13: International Emergency Management.....	373
Chapter 14: Legal Issues in Emergency Management.....	392
Chapter 15: Future Directions in Emergency Management.....	425
Appendix A: Common Emergency Management Acronyms.....	443
References.....	446

## PREFACE

*Fundamentals of Emergency Management* has been written to provide comprehensive coverage of the major topics that prospective emergency managers should understand about the way human systems attempt to cope with extreme events in their physical and social environments. This book does not repeat the material in FEMA training courses or federal agency guidance nor provide step-by-step instructions on how to comply with state and federal requirements. Neither does this book provide a detailed review all of the disaster-related literature from any of the physical, biological, or social sciences or from architecture, engineering, or planning. Rather, it attempts to identify the essential information needed to become a competent emergency manager.

The material does not presume a background in any particular discipline. Consequently, the coverage of some topics will seem quite elementary to a student with a background in that area. For example, the chapter on the principal hazards of the United States will be quite familiar to geography students. Indeed, the coverage of some topics might seem oversimplified to readers with advanced training. This is an inevitable consequence of the compromises that must be made when condensing a very large literature into a very small number of pages.

This book is intended to support a single semester course for the advanced undergraduate in a program—such as planning, public administration, or public health—in which emergency management is a minor or even just a single course. It will also be useful to graduate students at the Master's and doctoral levels. At this level, the instructor will probably wish to supplement the weekly chapter assignment with one or more additional readings.

Although we are the only ones listed as authors, there are others who made significant contributions to this book. First, we acknowledge the financial support of the Federal Emergency Management Agency and the Army Corps of Engineers. In particular, we wish to thank Dr. Wayne Blanchard for his contributions to the FEMA Higher Education Program that made this book and many emergency management courses possible. We wish to thank Professors Tom Drabek, Bob Stallings, and Dave Simpson for their extensive comments on an earlier draft of the book. We also thank D. Shawn Fenn and Arthur Oyola-Yemaiel for their contributions to a review of the draft at Emmitsburg.

## ABOUT THE AUTHORS

**Michael K. Lindell** is a professor at the Hazard Reduction & Recovery Center (HRRC) at Texas A&M University and has 30 years of experience in the field of emergency management, conducting research on community adjustment to floods, hurricanes, earthquakes, volcanic eruptions, and releases of radiological and toxic materials. He worked for many years as an emergency preparedness contractor to the U.S. Nuclear Regulatory Commission and has provided technical assistance on radiological emergency preparedness for the International Atomic Energy Agency, the Department of Energy, and nuclear utilities. In addition, he has trained as a Hazardous Materials Specialist at the Michigan Hazardous Materials Training Center and worked on hazardous materials emergency preparedness with State Emergency Response Commissions, Local Emergency Planning Committees, and chemical companies. In the past few years, Lindell directed HRRC staff performing hurricane hazard analysis and evacuation planning for the entire Texas Gulf coast. He has made over 120 presentations before scientific societies and short courses for emergency planners, as well as being an invited participant in workshops on risk communication and emergency management in this country and abroad. Lindell has also written extensively on emergency management and is the author of over 120 technical reports and journal articles, as well as 5 books.

**Carla Prater** is the Associate Director at HRRC. She was educated at private schools in Brazil, and received her Bachelor of Arts in Foreign Languages from Pepperdine University in 1975. She then returned to Brazil where she spent most of the next 12 years as a missionary. In 1991 she joined the Hazard Reduction & Recovery Center as a graduate student, and received a Master of Science degree in Urban and Regional Planning from Texas A&M University in 1993, followed by a PhD in Comparative Political Science, also from Texas A&M, in 1999. She has worked on several National Science Foundation projects covering various disaster phases, has published articles in disaster journals, and presented papers at conferences around the world. She has done consulting on emergency management and hazard mitigation for international agencies and foreign governments, and has taught courses on Comparative Politics, Risk Analysis, and Organizational & Community Planning & Response for Disasters in several countries. She is. Her research interests include hazard mitigation policy and emergency management institutions viewed from a cross-national perspective. Current projects include a study of the response to the Indian Ocean tsunami of December 2004 and a comparison of preparations for tsunamis and hurricanes in the United States.

**Ronald W. Perry** joined Arizona State University in 1983 as Professor of Public Affairs. He has studied natural and technological hazards and terrorism since 1971. His principal interests are incident management systems, citizen warning behavior, public education and community preparedness. He has published more than a dozen books and many journal articles. Perry currently serves on the Steering Committees of the Phoenix Urban Areas Strategic Initiative and the Phoenix Metropolitan Medical Response System. He also serves on the Arizona Council for Earthquake Safety and on the Fire Chief's Advisory Committees for the Arizona Cities of Gilbert, Mesa, Phoenix and Tempe. He holds the Award for Excellence in Emergency Management from the Arizona Emergency Services Association and the Pearce Memorial Award for Contributions to Hazardous Incident Response from the Phoenix Fire

Department. He also holds both the Award for Outstanding Environmental Achievement by a Team from the U.S. Environmental Protection Agency and a Certificate of Recognition from Vice President Gore's National Partnership for Reinventing Government.

**William C. Nicholson** earned a B.A from Reed College in Portland, OR and a Juris Doctor from Washington and Lee University's School of Law in Lexington, VA. He is a nationally known expert in emergency management and homeland security law. He serves as an Adjunct Professor at Widener University School of Law, where he conceived and instructs a course entitled "Terrorism and Emergency Law." Bill also serves as an Adjunct Professor at the University of Delaware, where he teaches his "Homeland Security Law and Policy" course. He previously served as General Counsel to the Indiana State Emergency Management Agency, Indiana Department of Fire and Building Services and Public Safety Training Institute as well as seven related Boards and Commissions in the public safety arena, including the Indiana Emergency Response Commission and Indiana Emergency Medical Services Commission. Bill has published numerous articles and has spoken nationwide on terrorism and emergency law issues. Bill received several awards for contributions while serving as General Counsel to the Indiana State Emergency Management Agency and is currently a member of the Editorial Board, *Best Practices in Emergency Services: Today's Tips for Tomorrow's Success* as well as the Editorial Board, *Journal of Emergency Management*. He is a member of the Wilmington, DE Local Emergency Planning Committee.