ORNL-6609

COMMUNICATION OF EMERGENCY PUBLIC WARNINGS

A Social Science Perspective and State-of-the-Art Assessment

Dennis S. Mileti*
John H. Sorensen

*Colorado State University

Date Published—August 1990

Prepared for the
Federal Emergency Management Agency
Washington, D.C.

Prepared by the
OAK RIDGE NATIONAL LABORATORY
Oak Ridge, Tennessee 37831-6285
operated by
MARTIN MARIETTA ENERGY SYSTEMS, INC.
for the
U.S. DEPARTMENT OF ENERGY
under Contract No. DE-AC05-84OR21400

TABLE OF CONTENTS

Table of Contents (continued)

Table of Contents (continued)

Table of Contents (continued)

LIST OF FIGURES

Figure

LIST OF TABLES

Table

ABBREVIATIONS, ACRONYMS AND INITIALISMS

CAWP	Colorado Avalanche Warning Program
CDWS	Civil Defense Warning System
DOT	U.S. Department of Transportation
EBS	Emergency Broadcast Sytem
EOC	emergency operations center
EPA	U.S. Environmental Protection Agency
EPZ	emergency planning zone
FEMA	Federal Emergency Management Agency
FBI	Federal Bureau of Investigation
NAWAS	National Warning System
NEHRP	National Earthquake Hazards Reduction Program
NEPEC	National Earthquake Evaluation Council
NHC	National Hurricane Center
NOAA	National Oceanic and Atmospheric Administration
NORAD	North American Air Defense Command
NRC	Nuclear Regulatory Commission
NRT	National Response Team
NSSFC	National Severe Storms Forecast Center
NWS	National Weather Service
NWWS	NOAA weather wire service
OES	Office of Emergency Services
PA	public address
RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendments and Reauthorization Act of 1986
USFS	U.S. Forest Service
USGS	U.S. Geological Survey
WSFO	Weather Service forecast offices
WSO	Weather Service Offices

ACKNOWLEDGMENTS

We are indebted to a number of people and organizations for their support and assistance in the preparation of this report. We gratefully acknowledge that some of the reports and studies that we reviewed were made available to us by the University Center for Social and Urban Research at the University of Pittsburgh through Jiri Nehnevajsa; the Disaster Research Center at the University of Delware through Henry Quarantelli; and the Natural Hazards Research and Applications Information Center at the University of Colorado through William Riebsame. These organizations and people are in no way responsible for the way we have used these materials or our interpretations and analyses.

Additionally, we express our appreciation to William Bogard and John Shefner, both graduate students in sociology at Colorado State University, for their assistance in helping us document the findings of past research on warning systems. This task was larger than we had originally envisioned, and we are grateful for their assistance.

We are also indebted to Ralph Swisher of the Federal Emergency Management Agency, Thomas P. Reutershan of the Department of Health and Human Services, Public Health Service, and George O. Rogers of Oak Ridge National Laboratory for many useful comments and suggested revisions on earlier drafts of this report.

Foremost, we wish to thank the Federal Emergency Management Agency for its support of the idea that it was time to take stock of what is known about warning systems from the viewpoint of the social scientist and for their confidence that we could do the job effectively.

ABSTRACT

More than 200 studies of warning systems and warning response were reviewed for this social science perspective and state-of-the-art assessment of communication of emergency public warnings. The major findings are as follows.

First, variations in the nature and content of warnings have a large impact on whether or not the public heeds the warning. Relevant factors include the warning source; warning channel; the consistency, credibility, accuracy, and understandability of the message; and the warning frequency.

Second, characteristics of the population receiving the warning affect warning response. These include social characteristics such as gender, ethnicity and age, social setting characteristics such as stage of life or family context, psychological characteristics such as fatalism or risk perception, and knowledge characteristics such as experience or training.

Third, many current myths about public response to emergency warning are at odds with knowledge derived from field investigations. Some of these myths include the "keep it simple" notion, the "cry wolf" syndrome, public panic and hysteria, and those concerning public willingness to respond to warnings.

Finally, different methods of warning the public are not equally effective at providing an alert and notification in different physical and social settings. Most systems can provide a warning given three or more hours of available warning time. Special systems such as tone-alert radios are needed to provide rapid warning.