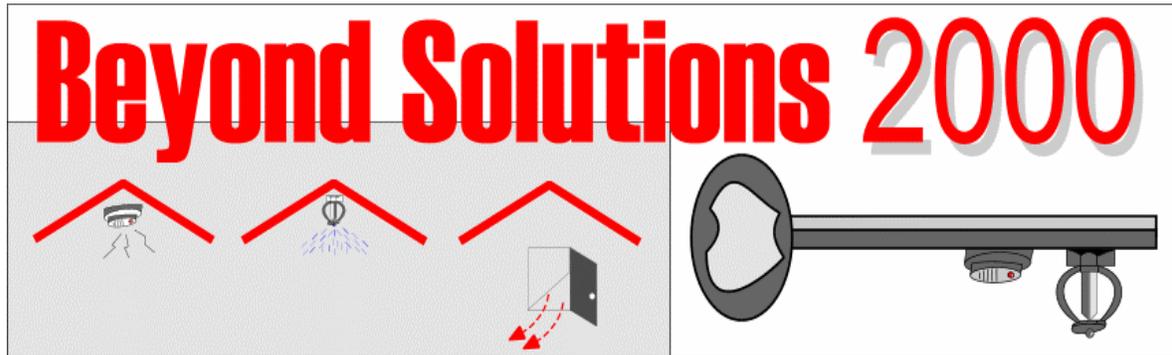


# Advocating Shared Responsibilities for Improved Fire Protection



Findings from a second symposium that examined issues related to egress capability, early warning, and fire sprinkler protection for those who may not be able to take life-saving action in a timely manner in the event of a fire, specifically young children, older adults, and people with disabilities.



Funding provided by  
Federal Emergency Management Agency  
United States Fire Administration



United States Senate  
WASHINGTON, DC 20510-2002

Dear Friends:

On behalf of the Congressional Fire Services Caucus, I would like to extend my thanks and appreciation to the individuals and organizations associated with Beyond Solutions 2000. Your hard work and dedication to life safety is a very noble cause, one that has raised national awareness to the many challenges facing at-risk populations vulnerable to the threat of fire.

Like you, I am a strong believer in the efficacy of education and prevention. We, as a nation, can make serious progress in reducing the number of deaths and injuries caused by fire by engaging our citizens in public education and prevention programs. Often times, all this requires is a stronger and sustaining commitment by all vested parties towards a common goal.

Certainly, the events of September 11<sup>th</sup> have made us more conscientious about our own personal safety and the built environment in which we work and reside. While government leaders at all levels explore ways to protect our communities against a wide range of threats, we as individuals must also assume a role. The recommendations presented in this report represent a course that can lead us in a positive direction.

There are many individuals in our nation who cannot adequately protect themselves from fire because of age or disabilities. They need our help. They need someone to champion their cause. I am pleased that the individuals and organizations of Beyond Solutions 2000 are committed to doing just that.

I commend you for your efforts, and encourage others to join your crusade.

Best wishes for your continued success and safety.

Sincerely,

A handwritten signature in black ink, appearing to read "Paul Sarbanes", with a long horizontal flourish extending to the right.

Paul Sarbanes  
Chairman  
Congressional Fire Services Caucus

# ...Beyond

## Solutions 2000

January, 2002



North American Coalition For Fire  
and Life Safety Education  
American Red Cross

British Columbia, Canada, Fire and  
Life Safety Advisory

International Association of Fire  
Marshals

National Association of State Fire  
Marshals

National Fire Information Council

National Fire Protection  
Association (NFPA)

National Fire Sprinkler Association

Residential Fire Safety Institute

United States Fire Administration

Symposium Planning Team  
Administration on Aging

American Council of the Blind

American Association of People  
With Disabilities

American Red Cross

Congressional Fire Services  
Institute (CFSI)

International Code Council, Inc.

National Electrical Manufacturers  
Association (NEMA)

National Fire Protection  
Association (NFPA)

National Fire Sprinkler Association

National SAFE KIDS Campaign

The Arc

United States Fire Administration

To Readers of the Beyond Solutions 2000 Report:

In April of 2001, the North American Coalition for Fire and Life Safety Education conducted a symposium to address the recommended solutions from the "Solutions 2000" symposium held in Washington, DC, in April 1999. There, we examined the current status of fire safety and made recommendations for improvements in the areas of early warning and detection, fixed fire suppression, and safe means of egress for those who cannot take life saving action, in a timely manner, in the event of a fire. Specifically, the audiences addressed were young children (under five), older adults (over sixty-five), and people with disabilities. The symposium was conducted in Washington, D.C. in conjunction with the annual Congressional Fire Services Institute Dinner.

The symposium brought together preeminent experts representing fire safety and the specific concerns of young children, older adults, and people with disabilities. The participants spent two intense days exploring present and futuristic practices and interventions for providing improved fire safety for those less able to protect themselves from unwanted fire, and offering ways to resolve the challenges presented by the solutions recommended in the report from the previous symposium.

The following report represents ways to address the suggested "solutions" formulated by the attendees. It is important to note that they intend to address "shared responsibilities" of both fire service representatives and representatives of the advocacy groups. Therefore, it is our fervent desire that fire safety experts and experts representing these high-risk groups, continue to work together in the future to implement the recommendations.

I congratulate the members of the North American Coalition for their willingness to conduct the symposium and wish to thank our speakers for helping to set the stage. In addition, I would like to thank Peg Carson and the Planning Team who gave much time and effort to ensuring the success for the "Beyond Solutions 2000" Symposium. For providing the means to translate this idea into reality we thank FEMA's United States Fire Administration for their funding grant, the NFPA International and its Center for High Risk Outreach for management. Lastly, we would be remiss if we did not express our sincere thanks to the Congressional Fire Services Institute (CFSI), the American Fire Sprinkler Association (AFSA), the National Fire Sprinkler Association (NFSA), National Electrical Manufacturers Association (NEMA), International Association of Fire Chiefs Foundation (IAFC-F), International Fire Service Training Association (IFSTA), Palmer and Cay Insurance, Inc., and The Phoenix Fire Department, for their generous financial and in-kind support.

Sincerely,

Rocky Lopes, Ph.D.

Chairman, North American Coalition for Fire and Life Safety Education

# Table of Contents

	Page
<b>Table of Contents and Acknowledgments</b> .....	1
<b>Introduction</b> .....	2-3
<b>Executive Summary</b> .....	4
<b>Symposium Planning Team</b> .....	5
<b>Collective Recommendations</b> .....	6
<b>Action Plan</b> .....	7
<b>Recommendations by for Improved Fire Safety</b>	
Young Children.....	8-10
Older Adults.....	11-12
People with Disabilities .....	13-15
<b>Appendix A: What’s New, What’s Better, and What’s Worse in the U.S. Fire Problem?</b> ...	16-18
<b>Appendix B: Considerations for Improved Fire Safety</b>	
Young Children.....	19-22
Older Adults.....	22-23
People Who Are Blind or Have Low Vision .....	23-24
People Who Are Deaf or Hard of Hearing .....	24
People With Physical Disabilities.....	25-27
People with Mental Retardation or Other Cognitive Disabilities.....	27-28
<b>Directory of Participants</b> .....	29-34

## Acknowledgments

We are grateful for the contributions that made it possible for *Beyond Solutions 2000* to continue progress toward fire safety for those at greater risk.

Funding _____	USFA/FEMA
Management _____	NFPA International Center for High-Risk Outreach
Group Facilitation _____	Palmer and Cay Insurance, Inc.
Group Facilitation _____	The Phoenix Fire Department, Phoenix, Arizona
Printing of Report _____	IAFC Foundation

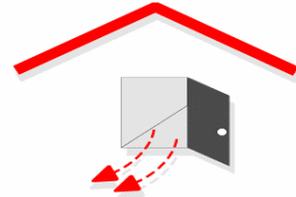
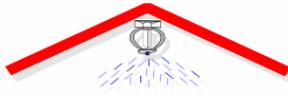
### Tables Hosted for the Thirteenth Annual Fire and Emergency Services’ Dinner

American Fire Sprinkler Association (AFSA)  
International Fire Service Training Association (IFSTA)  
National Electrical Manufacturers Association (NEMA)  
NFPA International Center for High-Risk Outreach  
National Fire Sprinkler Association (NFSA)

We Offer Special Thanks to the Congressional Fire Services Institute for Its Generous Support of *Beyond Solutions 2000* by Assisting with Meeting Space and Plans for the Symposium.

This report may be accessed electronically at [www.usfa.fema.gov](http://www.usfa.fema.gov).  
Recommendations made in this report are the collective opinion of the participants and do not necessarily reflect the views of any single organization.

# Introduction



## Background

*Beyond Solutions 2000* provided a unique opportunity to combine expertise from the fire protection community with advocacy for those at greater risk from fire. By invitation of the North American Coalition for Fire and Life Safety Education, individuals representing over 60 organizations participated in the symposium in Washington, D.C. April 26<sup>th</sup> and 27<sup>th</sup>, 2001. As the result of their time and deliberation, this report offers recommended actions needed to progress toward fire safety for high-risk groups.

National and international organizations that make up the North American Coalition for Fire and Life Safety Education agreed in 1997 on the need for a concerted effort to reduce a persistently greater fire death and injury rate within high-risk populations. A first symposium to share experience and set a course of action took place in Arlington, Virginia, in 1998. *Solutions 2000*, held in April 1999, was the first initiative to join expertise and networks from both communities, fire prevention and advocacy for the target audiences. Recommendations for improved safety were published in the report of *Solutions 2000* for young children, older adults, and people with disabilities.

Building on the efforts and recommendations of the previous symposium, *Beyond Solutions 2000* focused deliberations on universal recommendations from the earlier report, which addressed issues common to each of the targeted audiences. Participants were charged with examining issues related to egress capability, early warning, and fire sprinkler protection for those who may not be able to take life-saving action in a timely manner in the event of a fire, specifically young children, older adults, and people with disabilities.

Evidence was presented in opening session of successful initiatives that incorporated recommendations from the previous report of *Solutions 2000* in their development. The US Fire Administration (USFA) with assistance from the NFPA International Center for High Risk Outreach developed a 2-week course, “The Road to High Risk Audiences” (R119). This certification course provides in-depth understanding of high-risk audiences, motivating and enabling public educators to better target prevention programs. The Home Fire Sprinkler Coalition also made use of recommendations when designing their community education program, “Protect What You Value Most”. State Farm Insurance reported on research they have supported for the design of safer products in the home, as recommended in the earlier report.

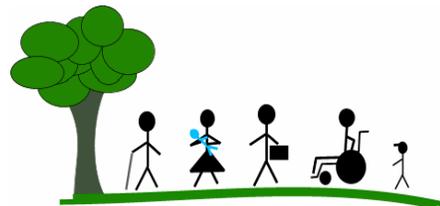
It is intended that the recommendations and substantiation offered in this report will provide direction for national efforts and serve as important considerations for developing strategies at the community level. Organizations are encouraged to implement a plan of action based upon recommendations that follow. It is hoped that actions will result in measurable solutions.

Recommendations are presented within this report as identified in the following sections:

- **Collective Recommendations** – In closing plenary session, participants having deliberated in focus groups, met to share their recommendations for each audience: young children, older adults, and people with disabilities. Facilitators led the discussion with all participants to identify those recommendations pertinent to all groups, the Collective Recommendations.
- **Action Plan** – The Symposium Planning Team acknowledged the desire of symposium participants that action be taken on their recommendations. They met for one day in October 2001 to respond to the Collective Recommendations. Dennis Compton, Chief of the Mesa, Arizona, Fire Department, facilitated this all-day session that resulted in prioritized action steps to be accomplished within the next five years.
- **Recommendations for Improved Fire Safety** – Those attending *Beyond Solutions 2000* were invited to participate in one of 3 focus groups so that fire safety issues could be considered from the perspective of each specific high-risk audience, either young children, older adults, or people with disabilities. Each group addressed the need for improved fire safety in the areas of (1) egress capability, (2) early warning, and (3) fire sprinkler protection. The facilitated process asked that they define the current status of fire safety for their specific audience, identify potential obstacles, and then agree on recommendations to achieve improved fire safety. The specific recommendations from each focus group are presented along with substantiation taken from discussion during their deliberation.

## Objectives

- Bring together preeminent experts representing fire safety and the specific concerns of young children, older adults, and people with disabilities
- Provide fire safety statistical information pertinent to the target groups
- Revisit state-of-the-art practices, interventions and recommendations for providing fire safety for those less able to protect themselves in the event of unwanted fire
- Explore the relationship and importance of egress capability, early warning and fire sprinkler protection in the room of fire origin and recommend a continuing plan of action addressing shared responsibilities for educating the target groups
- Publish and disseminate symposium findings and recommendations including priorities and steps for implementation





## Executive Summary

From the discussion in all high-risk focus groups, it is evident that more aggressive methods of bringing public awareness and understanding to the fire problem are needed. Each focus group placed emphasis on increasing public recognition of fire hazards in order to assist wider use of fire detection and alarm systems, and fire sprinkler protection. The fire protection community should not assume that public acceptance of the fire problem currently exists. **People need better understanding of the threat of fire before they will be motivated to change their behavior or their environment.**

When reviewing the recommendations in the earlier report of April 1999, experts participating in *Beyond Solutions 2000* were somewhat dismayed to admit that significant progress has yet to take place. Recognizing this, they have stressed measures meant to facilitate outcomes recommended in the earlier report. Enabling factors making the installation of smoke alarms and fire sprinklers affordable and readily available are needed. Validated messages and materials, and increased research are also themes supported by all groups. A central clearinghouse for information, networking, and maintaining momentum toward solutions is given priority. **Enabling measures must be initiated to support recommended outcomes.**

A dichotomy may seem to exist between the desire to provide universal programs appropriate and adaptable to all ages and abilities, and the need to address specific issues of target audiences. The challenge presented as you implement these recommendations is to understand and be considerate of the needs of all audiences when designing measures for improved fire safety. Each target audience should rightfully expect to be included when a message or program is delivered to the public; however, they don't expect or suggest exclusive treatment. **Inclusive and adaptable methods and materials are important guidelines for all initiatives.**

Although participants in *Beyond Solutions 2000* represented diverse disciplines and philosophies, the recommendations they made tend to be directed more, but not exclusively, toward “people” solutions. Sensitivity and awareness are themes pointing toward education and training rather than engineering and environmental improvements. **While developing innovative means of protecting people from fire, we are definitely told to systematically initiate social change so that people will value and use improved technology.**

# Symposium Planning Team

The planning team's role was to plan the agenda and content for the *Beyond Solutions 2000* Symposium, to help identify appropriate organizations to participate in the event, and to disseminate the results and recommendations of the symposium. To provide continuity, members of the original planning team, *Solutions 2000*, were invited to continue. Project organizers worked to involve people from various fire prevention organizations and groups representing people with disabilities on the planning team. We are most appreciative of the significant contributions made by the individuals and organizations listed.

**Jim Dalton**

Chair, *Beyond Solutions 2000*  
Planning Team  
Director of Public Fire Protection  
National Fire Sprinkler Association  
(NFSA)

**Rocky Lopes, PhD**

Chair, North American Coalition  
for Fire and Life Safety  
Education  
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American Red Cross

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Manager, *Beyond Solutions*  
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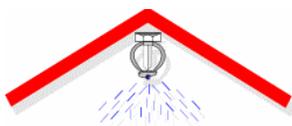
# Collective Recommendations

In closing plenary session, participants having deliberated in focus groups, met to share their recommendations for each audience: young children, older adults, and people with disabilities. Facilitators led the discussion with all participants to identify those recommendations pertinent to all groups.



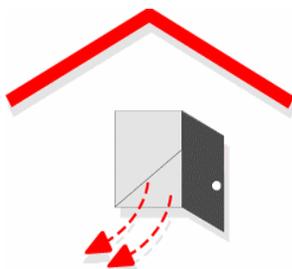
I. Identify or establish a center or consortium of centers that will serve to bring national focus to the fire problem and recommendations for improved safety for young children, older adults, and people with disabilities. The center will perform the following functions:

- Provide a central clearinghouse for information, including standardized messages, programs, data, and research
- Facilitate strategic planning with existing coalitions and organizations having a shared mission
- Support surveillance of losses and risks/patterns
- Establish screening or a standardization process for messages and programs
- Encourage joint action through an alliance of organizations
- Fully involve engineers so that environmental and technical solutions are supported
- Advocate widespread use of available engineered solutions, e.g. fire-safe cigarettes and quick-release burglar bars



II. Evaluate and employ alternative methodologies and mediums to better educate the public and to promote actions that improve their level of fire safety, both in rural and urban settings. Specifically address the following:

- The fire problem
- Installation of early warning, detection and alarm devices
- Installation of fire sprinklers
- A practiced escape plan



III. Promote the installation of fire sprinklers in places where people live, work, and assemble by implementing the following strategies:

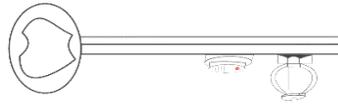
- Make the costs more affordable.
- Educate the public on the benefits of fire sprinkler systems in general
- Educate public officials regarding technology
- Identify funding help and incentives
- Identify, showcase, and recognize communities that have successfully implemented programs resulting in increased installation of residential fire sprinklers

IV. Influence the development and advocate the adoption and enforcement of codes and standards that support specific measures designed to improve fire safety for young children, older adults, and people with disabilities.

V. Support research and collection of data regarding behaviors, environmental factors, and personal factors so that products and delivery systems designed to improve fire safety can be validated.



# Action Plan



The Symposium Planning Team acknowledged the desire of symposium participants that action be taken on their recommendations. They met for one day in October 2000 to respond to the Collective Recommendations. Dennis Compton, chief of the Mesa, Arizona, Fire Department, facilitated this all-day session that resulted in prioritized action steps to be accomplished within the next five years.

I. Representatives of USFA and the NFPA will invite stakeholders to participate in an organizational meeting to achieve the following:

- Clearly define the function and operation of a consortium dedicated to supporting recommendations for improved fire safety as identified in the report of *Beyond Solutions 2000*
- Obtain commitment of organizations for meeting goals of the consortium

*Measurement: By April 2004, funding and staffing will be secure with goals and steps for action identified. Participating organizations will have documentation of initiatives that are in progress.*

II-A. Establish a focus group representative of fire service organizations, fire and life safety educators, and stakeholders to analyze the effectiveness of public education methodologies and mediums, and develop a roadmap for educational strategies to address the fire problem.

II-B. Based upon the roadmap of effective strategies, develop a public education outreach program for parents and other childcare providers, older adults, people with disabilities, as well as individual members of at-risk audiences.

*Measurement: By April 2004, resources will be identified, and the roadmap of effective strategies will be used to adjust educational methodologies of outreach efforts by affiliated organizations. Specific initiatives have been reported to the Symposium Planning Team in preparation for the April 2004 symposium.*

III. Coordinate with the Home Fire Sprinkler Coalition and national fire sprinkler organizations a means to incorporate five to ten non-traditional organizations e.g., AARP, AAPD, National SAFE KIDS in advocacy work with them.

*Measurement: By April 2004, representatives of the Home Fire Sprinkler Coalition and national fire sprinkler organizations will report to the Beyond Solutions 2000 Planning Team on advocacy work that is being carried out in partnership with no less than five nontraditional organizations.*

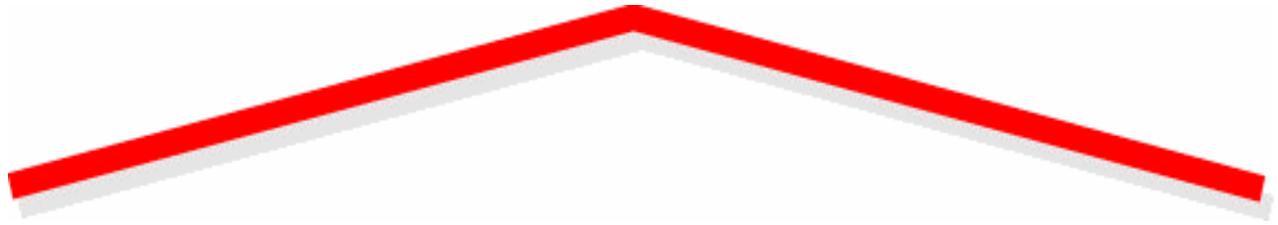
IV. Petition the codes and standards organizations to create materials, easily understood by lay-people, for distribution by stakeholders who will promote understanding of and participation in the process. Include a nontechnical overview of life safety requirements that affect new and existing buildings.

*Measurement: By April 2004, documents will have been prepared for people with disabilities by codes and standards organizations and reviewed by advocacy groups. A survey by the Beyond Solutions 2000 Planning Team shows evidence that (1) Codes- and standards-making groups have received more comments/hearings from nontraditional constituents. (2) Local officials indicate awareness and increased enforcement of requirements pertinent to at risk groups. (3) Advocacy groups report that materials help make codes and standards requirements and related processes more easily understood.*

V-A. Analyze five organizations outside of the fire service that have effectively reduced a negative behavior, or promoted a positive one, and apply their models to the fire problem.

V-B. Request the USFA to fund grants that support intervention research in fire safety, and to bring research organizations together in preparation for conducting needed research.

*Measurement: By April 2004, the USFA will have commissioned and funded the research. Results will be reported to the April 2004 symposium.*



## Recommendations for Improved Fire Safety by Focus Group

Those attending *Beyond Solutions 2000* were invited to participate in one of 3 focus groups so that fire safety issues could be considered from the perspective of each specific high-risk audience, either young children, older adults, or people with disabilities. Each group addressed the need for improved fire safety in the areas of (1) egress capability, (2) early warning, and (3) fire sprinkler protection. The facilitated process asked that they define the current status of fire safety for their specific audience, identify potential obstacles, and then agree on recommendations to achieve improved fire safety. The specific recommendations from each focus group are presented along with substantiation taken from discussion during their deliberation.

### Young Children

**1. Reduce fire deaths in young children by 50% by 2012 through implementation of strategies that include increasing the number of homes with fire sprinkler installations.**

A defined goal will support planning based upon an agreed outcome and will increase the likelihood of success.

When planning include the following:

- Collaborate with groups to establish baseline data so that measurable outcomes can be established
- Determine what outcomes are established by groups working to reduce fire deaths among young children

**2. Implement a strategy for improved safety that encompasses all of the E's: Education, Enforcement, Engineering, Evaluation, Economic incentive, and Empowerment.**

Include the following considerations in planning:

- Leverage existing coalitions to strengthen prevention activities.
- Educate those who deliver public safety education about fire sprinkler protection, and smoke alarms.
- Integrate fire and life safety methods and materials in teacher training courses at universities, colleges, and in continuing education offerings.
- Educate families and caregivers in proper fire safety behavior with emphasis on the importance of better supervision of children.
- Factor in changing multi-culture, special needs, and changing family structures when developing materials and suggesting methods for delivery of messages. Develop seamless programs that can be integrated into existing efforts and that span the life cycle. Programs need to be inclusive of all populations rather than separately targeted efforts.
- Make messages and methods accurate, developmentally appropriate, consistent, and multicultural. Teach children basic emergency skills using an appropriate framework.<sup>1</sup>

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<sup>1</sup> Basic Education Lifesaving Skills (BELS) is a recommended framework developed by Emergency Medical Services for Children (EMS-C). Additional information can be found at the EMS-C website, [www.EMS-C.org](http://www.EMS-C.org).

**3. Maintain a central network for sharing resources, for support of increased research related to child behavior and fire setting, and for the dissemination of information.**

This network will serve to do the following:

- Ensure consistency of messages and strengthen support for the initiatives of each.
- Leverage existing organizations to direct national focus to concerns and recommended solutions.
- Support research on developmental issues that relate to child safety behavior, and intervention measures.
- Validate products and messages.

**4. Use marketing techniques to motivate people to install smoke alarms, fire sprinkler protection, and to practice their escape plan.**

In spite of public education efforts, the number of lives lost in fires from smoke inhalation indicates that people don't understand that smoke is lethal. There must be an aggressive effort to increase understanding of the dangers of fire, the need for fire protection, and the necessity for practicing a plan for safe egress in an emergency.

Incorporate the following in marketing strategies:

- Clearly identify the actions that are needed and why.
- Include local departments and agencies in a grass roots effort to effectively reach all people.

**5. Support new and emerging engineering strategies designed to protect children.**

There has been a significant reduction in deaths in the five and under age group following requirements for child-resistant lighters. Other engineered solutions need to be identified and supported.

Recently engineered products that utilize current technology but may require public support such as "smart stoves", self-extinguishing cigarettes, and childproof matches were discussed.

# Older Adults

**1. Use social marketing techniques to develop and deliver targeted, culturally sensitive educational efforts that promote the installation of fire sprinklers and use of long-lasting batteries and/or hard-wired, battery back-up smoke alarms.**

Social norms regarding the understanding and use of fire protection technology must change before environmental and behavioral changes can be expected. Include the following considerations in the design of social marketing initiatives:<sup>2</sup>

- Make messages relevant to the concerns and life styles of older adults. Define the primary benefits of life safety and protection from fire in an adjoining structure, and the secondary benefit of preservation of property.
- Identify economic benefits and sources of assistance.
- Select messengers who are believable and trusted because the messenger is as important as the message. Network with service professionals who work with older adults so they may share fire safety information with their client base. Tap into service learning projects for delivery systems where one-on-one contact is warranted.
- Promote a wellness model that emphasizes positive outcomes for total health, not only absence of disease and injury.
- Design materials that are intergenerational and that can be used with all ages living in the home.
- Make materials affordable, readily available, and easily understood.
- Keep the fire service abreast of current technology and recommended practice regarding automatic detection and suppression device.

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<sup>2</sup> Social marketing is a social change strategy that combines commercial marketing techniques with applied social science approaches to change behaviors that benefit individuals or the general society. Social marketing utilizes marketing's mix of the 4 P's (product=benefits; price=barriers; place=support; and promotion=credible information), as well as segmentation of the market and exchange theory.

**2. Support expanded research of human fire behavior, and continued surveillance of deaths, injuries, risks, and protective factors.**

Research is needed to support the development of targeted solutions including the following:

- Materials and products
- Messages
- Delivery methods

**3. Identify, showcase, and recognize communities that have successfully promoted the installation of home fire sprinklers, made the costs more affordable, and educated the public on the benefits in general.**

Communities that have demonstrated success can offer the benefit of experience to all concerned including the following:

- Homeowners
- Builders
- Installers
- Local officials

Recognition will focus national attention to the problem and recommended solution, as well as reward community initiative.

**4. Advocate and propose legislation that all new structures be equipped with early warning, detection and alarm, and fire sprinklers.**

Make advocacy of national organizations known to the public by the following:

- Working with professional organizations and educators to incorporate fire and life safety features in new and existing structures
- Educating the design community and homebuilders about early warning, detection and alarm devices, fire sprinklers, and safe means of egress

**5. Establish a centralized clearinghouse to identify and disseminate fire safety information.**

Ensure that fire safety information and programs are as follows:

- Correct and appropriate
- Adaptable
- Consistent in message according to recognized authority
- Readily available to all organizations

# People With Disabilities

## **1. Identify the audience, funding sources, and delivery system(s) for the recommendations made in the *Solutions 2000* report (April 1999).**

Sufficient progress has not been made in improving fire safety measures for people with disabilities in spite of specific recommendations made in the report of *Solutions 2000*. This is in great part due to lack of a national plan with assigned responsibilities and deadlines for action.

Recommendations are repeated from the previous report, emphasizing the need for action. In order to make progress it is suggested that a strategy be developed for each recommendation so that the audience, funding sources, and delivery systems are defined.

Recommendations from the *Solutions 2000* report:

- Educate the fire service and building design community on fire safety considerations for people with disabilities.
- Organize disability and fire service representatives into a national coalition with two goals: to raise fire safety awareness among the disabled community, and to raise the awareness of the fire service to the needs of people with disabilities.
- Improve emergency egress from buildings that house people with disabilities.
- Form a coalition to expedite the implementation of the fire safe elevator.
- Pay more attention to fire safety issues of people with disabilities during the code development process.

## **2. Establish a national center for ongoing collaboration and action for improved fire safety for people with disabilities.**

Through the center, develop an action plan and provide support for continuity of initiatives that will achieve the following:

- Maintain an active network of experts and advocates in the field
- Focus national attention on needed solutions
- Identify, evaluate, and share resources
- Assign a task group to develop criteria for early warning and fire detection devices to meet specific needs of people with disabilities

### **3. Include people with disabilities in public education strategies.**

The need to inform and educate the public about fire with emphasis on the necessity of quick response still exists. More aggressive measures intended to motivate people to take action are suggested.

Emphasis needs to be placed on recommendations and availability of the following:

- Early warning, detection and alarm devices
- Fire sprinkler protection
- A practiced plan of egress

A public educational strategy must include people with disabilities. Separately targeted programs are not recommended. Just as people with disabilities are part of the larger community, messages and programs should be designed to be inclusive of all segments of the population. To be more effective at reaching people with disabilities, programs must consider the following:

- Materials in alternate formats<sup>3</sup>
- Sensitivity training for instructors
- Means of communication between emergency service providers and people with disabilities

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<sup>3</sup> Alternate format materials include large print, Braille, audiotape, and disk.

### **4. Develop emergency response systems and procedures inclusive of pertinent evacuation instruction for people with disabilities.**

Enable emergency dispatch centers to routinely obtain information critical to specific needs of people with disabilities. The Emergency Response System should include the following:

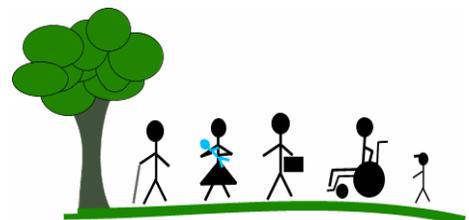
- Specialized communication equipment in the emergency response center that is compatible with the communication equipment utilized by those with disabilities
- Pre-emergency planning that identifies building access points and location of individuals with disabilities within the building
- Prior knowledge of any specific and unique survival needs of individuals during evacuation and once removed from the hazardous environment

**5. Initiate a national review of, and facilitate a discussion about, conditions related to safety and egress for people with disabilities that might be exacerbated by fire safety codes or standards.**

Local jurisdictions have the authority to determine which codes and standards they adopt. The degree of enforcement of the codes and standards that are adopted may vary from one jurisdiction to another. The result is neither uniformity, nor consistency of requirements. Added to that is the problem of certain requirements that may compromise a person's ability to escape. To improve this situation, a more thorough analysis of building features and systems and the needs of people with disabilities for safe emergency egress is needed.

A hearing to include the ATBCB, model code organizations, and special interest groups on the fire safety needs of people with disabilities is suggested. Together they should determine hazards that exist and how they may be alleviated or exacerbated by current codes or standards. Actions for resolving these issues need to be determined and supported by all bodies. The types of issues to be addressed in a hearing include the following:

- Fire door opening pressures that exceed ADAAG standards
- Changing conditions caused by self-closing fire corridor doors that unexpectedly block egress routes for people with vision impairments, cognitive and some physical disabilities
- Unmarked areas of evacuation assistance or designated locations for evacuation chairs
- Some alarm systems with shrill and loud tones that confuse or injure people with cognitive or hearing disabilities
- "Panic" door hardware that is inoperable by many people with physical disabilities
- Signage, including exit signs, that is unusable in a smoke-filled room



## Appendix A

Each of those who participated in *Beyond Solutions 2000* was expert in their field. A great benefit of the symposium was that experts shared knowledge and experience from divergent fields in order to find solutions to a common concern. To focus deliberation with an accurate understanding of the fire problem, in the opening session Dr. Hall defined the current problem with emphasis on young children, older adults, and people with disabilities. Notes from his presentation follow.

# What's New, What's Better, and What's Worse in the U.S. Fire Problem?

*Presented by Dr. John R. Hall, Jr., Assistant Vice President, NFPA, Fire Analysis and Research*

In 1999, 81% of U.S. civilian fire deaths were in homes – dwellings, duplexes, manufactured homes, and apartments. Nearly all the rest (13% of the total) were in vehicle fires, principally ordinary cars and trucks. As in every year, people die in fire where they feel safest – in their own homes and vehicles.

Homes not only account for most fire deaths, they also account for higher fire death rates than other places. For example, although people in homes outnumber people in hotels or motels by 50–75 to 1, fire deaths in homes outnumber fire deaths in hotels or motels by 100 to 1. Although people in homes outnumber people in nursing homes by 200 to 1, fire deaths in homes outnumber fire deaths in nursing homes by 250 to 1. People outside the family are more often the keys to fire safety than they are the greater threats that many people believe them to be.

Overall fire statistics are available through 1999, but detailed statistics are only available through 1998. Therefore, it is useful to look at the overall statistics over the most recent three years.

Reported home fires were down to 371,000 in 1999 (down 6.2% since 1997, including a 6.6% decrease from 1997 to 1998 and a 0.4% increase from 1998 to 1999). Civilian home fire deaths were down to 2,895 in 1999 (down 13.8% since 1997, including a 4.2% decrease from 1997 to 1998 and a 10.1% decrease from 1998 to 1999). Civilian home fire injuries were down to 16,050 in 1999 (down 7.2% since 1997, including a 2.9% decrease from 1997 to 1998 and a 4.5% decrease from 1998 to 1999). Whether we go back 2 years, 20 years, or a century, we see progress by every measure we have. Fewer people are being harmed, and safety, measured by rates relative to population, has significantly improved.

These patterns of improvement vary somewhat by major fire cause. Smoking-material home fires, the leading cause of fatal home fires, were down 1% from 1997 to 1998. Deaths (851 in 1998) were down 2% from 1997 to 1998, while injuries were up 1% in the same period. Incendiary and suspicious home fires, the leading cause of property damage in home fires, were up 1% from 1997 to 1998. Deaths (579 in 1998) were down 5% in the same period, while injuries were up 16%.

Cooking equipment home fires were down 8% from 1997 to 1998. Deaths (396 in 1998) were up 45% in 1998, a very atypically bad year for them, and injuries were down 7% in the same period.

Heating equipment home fires were down 18% from 1997 to 1998. Deaths (388 in 1998) were down 4% in the same period, while injuries were up 7%. Electrical distribution equipment home fires were

down 6% from 1997 to 1998. Deaths (284 in 1998) were up 13% from 1997 to 1998, while injuries were down 14%.

Child-playing home fires were down 11% from 1997 to 1998. Deaths (216 in 1998) were down 11% also, and injuries were down 15% in the same period. Since the advent of the child-resistant lighter in mid-1994, deaths due to all types of child-playing fires have plummeted, so much so that a few more years of this trend will suffice to remove preschool children from the ranks of the high-risk populations, just as they have been in Europe and Japan.

Upholstered furniture remained the number one burnable product first ignited with the largest share of home fire deaths. Upholstered furniture home fires were down 2% from 1997 to 1998. Deaths (543 in 1998) were down 17% from 1997 to 1998, while injuries were down 1% in the same period. Mattress and bedding home fires were down 5% from 1997 to 1998. Deaths (398 in 1998) were down 18% from 1997 to 1998, while injuries were up by 0% (an increase so small it rounds to zero) in the same period.

Clothing ignition home fires were down 4% from 1997 to 1998. Deaths (193 in 1998) were down 3% in the same period, and injuries were down 12%.

However fires start in homes, home smoke alarms greatly reduce the likelihood of death occurring in that fire. At least one smoke alarm could be found in 94% of U.S. homes in 1997, the latest year for which statistics are available. Only 60% of 1998 U.S. home fires took place in homes with smoke alarms, however, and that was down slightly from the historic high the year before. In 71% of home fires occurring in homes with smoke alarms, the smoke alarms were also operational, a rate slightly better than the usual percentage. And the statistical probability of dying was reduced 40% if home smoke alarms were present in 1998, a slightly less effective figure than in other recent years. In general, home smoke alarms reduce the likelihood of dying if fire occurs by nearly half (40–50%).

We don't know how many U.S. homes have fire sprinkler systems, but only 2.4% of home fires in 1998 were in homes with sprinklers. In those homes, sprinklers were operational in 85% of the fires. The statistical probability of dying was reduced 78% and the average loss per fire was reduced by 55% in 1998. In general, fire sprinklers reduce the likelihood of dying and the expected property loss per fire by one-half to two-thirds.

The importance of preventing flashover is illustrated in the interplay of several statistics regarding 1998 home fires. Roughly one-fourth of the fires (28%) had flame spread beyond the room of origin, but those larger fires accounted for most of the fire deaths (80%). Half of U.S. home fire deaths involve a victim located outside the room of origin, killed by a fire with flame spread beyond the room of origin. One-sixth involve victims who are "intimate" with ignition – so close to the fire that nothing but outright prevention would be likely to save them. One-sixth to one-fifth of home fire victims are in the room of fire origin, not intimate with ignition, and killed by a fire that flashes over the room, i.e., spreads flame beyond it.

Current high-risk populations include children ages five and under, who accounted for 392 home fire deaths in 1998, down 33% from 1997 to 1998. In 1998, their risk of dying was only 1.4 times the all-ages average in a home fire, the lowest ratio ever and far below the double risk they typically had before 1994.

At the other end of the age spectrum, people ages sixty-five and over accounted for 912 home fire deaths in 1998, down 4% from 1997 to 1998. Their risk of dying was 2.2 times the all-ages average in a home

fire, the highest ratio ever, but the trend for their death rate relative to a rapidly growing population was still sharply down.

A total of 365 home fire death victims per year in 1994–98 were coded as mentally or physically disabled. This is probably undercoded, partly because of respect for victims and a desire not to appear to blame them for their fates and partly because the same data element is used to record a number of risk-increasing conditions. For example, this total does not include the 319 home fire death victims per year in 1994–98 who were coded as impaired by drugs or alcohol, a form of temporary disability. It also does not include age-related limitations, both the 205 fatal victims per year who were coded as “too young” to act effectively and the 101 fatal victims per year who were coded as “too old” to act effectively.

In fact, half (51%) of the fatal home fire victims coded as mentally or physically disabled were also aged 65 or older. Nearly all (85%) were age 30 or older, compared to only 57% of the population.

Putting this all together, people are safer from fire than they used to be, and safety is advancing across the board, for all groups. Progress has been especially rapid recently for preschool children and child-playing fires. The home heating equipment fire problem also continues to drop sharply. None of the causes shown have indicated any sustained adverse trend. The biggest fire problem that has shown a sustained adverse trend of some size would be the candle fire problem, which even so remains small compared to the leading causes of fire.

Smoke alarms are nearly everywhere, but the few homes without them are drawn disproportionately from the ranks of those who need them most. There are many “loose ends” regarding home smoke alarms, from the smoke alarms that are nonoperational to the households who have not developed and practiced an escape plan to make effective use of the extra time smoke alarms provide.

Fire sprinklers remain a rare exception in U.S. homes, but their performance in these limited locations has been every bit as dramatic as in commercial settings. Other strategies that prevent flashover through fire containment, including compartmentation and changes in burnable products to slow fire growth, also show great promise and are worth further examination.

## Appendix B

# Considerations for Improved Fire Safety for High-Risk Groups

In addition to defining the fire problem, it was helpful to define characteristics of the targeted audiences that might affect solutions for improved fire safety. The following presentations helped ensure that discussion and recommendations realistically considered abilities, characteristics, and recommended means of communication for each audience.

## Young Children

*Presented by Angela Mickalide, PhD, Program Director, National SAFE KIDS Campaign*

*The following information is taken from the speaker's PowerPoint presentation.*

I'm delighted to represent the National SAFE KIDS Campaign at the *Beyond Solutions 2000* conference. I will be discussing the magnitude of the problem of residential fire injury and death among children, characteristics of children that place them at excess risk, and potential injury prevention strategies for implementation.

In 1998, 575 children ages 14 and under died in residential fires. More than 50% of these children were ages 4 and under. More than 70% of all fire-related deaths are from smoke inhalation, caused by toxic gases produced as fires develop and spread. Flames and burns are responsible for the remaining 30% of fire-related deaths and injuries. Each year, nearly 40,000 children ages 14 and under are injured by fires in the home.

Fires and burns remain the fifth leading cause of unintentional injury-related death among children ages 14 and under.

In 1998, the actual number of deaths due to unintentional injury among children ages 0 –14 were:

Motor vehicle .....	1765
Drowning .....	1003
Pedestrian.....	726
AOI .....	661
Fire and burns .....	608
Other .....	572
Bike .....	203
Firearm .....	121
Falls .....	120
Poisoning.....	69
<b>Total .....</b>	<b>5848</b>

Fire and burns are the leading cause of death among children in the five states of Arizona, Michigan, Pennsylvania, West Virginia, and Vermont. Fire and burns tie with motor vehicle occupant deaths in Connecticut.

- More than half of children ages 5 and under who die from home fires are asleep at the time. Another one-third of these children are too young to react appropriately.
- Home fires and home fire-related deaths are more likely to occur during cold-weather months, December through February.
- A working smoke alarm is not present in two-thirds of the residential fires in which a child is injured or killed. Households without working smoke alarms are approximately two and a half times more likely to have a fire than those with working smoke alarms.
- Home cooking equipment is the leading cause of residential fires and fire-related injuries. However, residential fires caused by smoking materials (e.g., cigarettes) are the leading cause of fire-related death, accounting for nearly 23% of all fatalities.
- Child-play fires are the leading cause of residential fire-related death and injury among children ages 5 and under.
- Half of all child-play home fires begin in a bedroom or living room where children are often left alone to play. Nearly 80% of these fires are started by children playing with matches or lighters.
- The South has the highest fire-related death rate in the country, 29% higher than the national average.

Children ages 5 and under, representing 9% of the population yet nearly 20% of all fire-related deaths in the home, are more than twice as likely to die in a fire as the rest of the population.

- Male children have a higher rate of fire-related death and injury than female children. Studies indicate that an estimated 38% of children ages 6 to 14 have played with fire at least once. Males are nearly twice as likely as females to have played with fire.
- Children from low-income families are at greater risk for fire-related death and injury, due to factors such as lack of working smoke alarms, substandard housing, use of alternative heating sources, and economic constraints on providing adequate adult supervision.
- Children living in rural areas have a dramatically higher risk of dying in a residential fire. Death rates in rural communities are more than twice the rates in large cities and more than three times higher than rates in large towns and small cities. This may be due in part to larger distances from fire departments in rural America.
- African American children are more than three times, and Native American children more than two times, as likely as Caucasian children to die in a fire. This may have more to do with socio-economic status than ethnicity. More research is needed on sociocultural factors that may place African American and Native American children at excess risk.

Injuries have enormous financial effects on the family, community, and society as a whole.

- The total annual cost of fire-related burn deaths and injuries among children ages 14 and under is nearly \$1.2 billion. Children age four and under account for more than \$550 million of these costs.
- Every dollar spent on a smoke alarm saves this country \$21.

Children are not miniature versions of adults. They are at greater risk of injury because of their smaller size and lack of experience. They are still developing physically, cognitively and behaviorally. In residential fire, children often demonstrate a less acute perception of danger, less control of their environment, and a limited ability to react promptly and properly to a fire, all of which contributes to excess risk. Specifically, a child's small size puts them at risk to hazards that many adults don't recognize. For example:

#### Access

Children can easily reach inside grandma's purse on the floor, which contains matches or lighters.

#### Center of Gravity

Greater risk of falling into open fire pits at cookouts or falling against a hot open stove door.

### Surface Area

A scald burn from a cup of coffee covers a larger surface area of a child.

### Tolerance

The same amount of toxic gases emitted in a fire could harm a child but perhaps give an adult only a headache.

### Natural Protection

The skin on a child is thinner and more delicate. This renders children more vulnerable to hazards, especially to scald and contact burns.

### Recognition

Children may not recognize the dangers of fire in a fireplace, thinking it to be merely pretty.

### Attraction

Brightly colored objects such as lighters can easily attract children. Children's first experience with fires is often with candles on a birthday cake. These are placed before the child and when he blows them out, everyone applauds his success.

### Escape

Children cannot flee from a crib in a home fire, they are trapped. Children tend to hide in closets and under beds in fires, fearing the sound of the smoke alarm and/or the firefighters' gear. More than 40% of residential fire-related deaths among children ages 9 and under occur when the child is attempting to escape, is unable to act or is acting irrationally. Although an escape plan may help to reduce these deaths, only 26% of households have developed and practiced a plan.

### Smaller Knowledge Base

Learning occurs by experiencing. Infants and children are at an immediate disadvantage simply because, in their young years, they have limited experience. A balance must be achieved between protecting children and allowing them to experience harmful situations while minimizing the risks of injury. Most children have experienced burning themselves on a hot grill or stove or touching a candle.

### Cognitive Ability

Children do not have the developed cognitive skills to know what to fear. Often you'll see a young child trying to start a fire because they do not realize that this is a dangerous activity and do not know how quickly fires grow (Piaget's concept of conservation).

### Desire to Explore

Children are curious and have a natural desire to explore their environment by opening and closing drawers or cabinets, for example. This is why matches, lighters, and other flammables need to be locked up and out of reach.

### Putting Things in the Mouth

Children go through a natural stage of exploring by putting things in their mouths, especially under age three. In any given year, 8000 children are poisoned by cigarette butts and it only stands to reason that matches and lighters are nearby also posing a burn risk to children.

Preventing injury requires a multifaceted approach. Addressing a variety of factors will help ensure the success of injury prevention efforts. These factors include the following:

### Education

Efforts to reach children, caregivers, and other target groups to change knowledge, attitudes, and behavior.

### Environmental Modifications

Changes in the physical environment; the design, development, and manufacture of safety products. Smoke alarms are extremely effective at preventing fire-related death and injury. The chances of dying in a residential fire are cut in half when a smoke alarm is present. Residential sprinkler systems are also tremendously effective at preventing fires and mitigating this risk.

### Enactment and Enforcement

Pass, strengthen, and enforce laws; issue and enforce regulations; and develop voluntary standards and guidelines for devices and products.

### Economic Incentives

Making safety devices available at low cost or no cost to families in need through community-based interventions as well as working with manufacturers to lower retail costs.

### Empowerment

Activism at the grassroots level, the formation of injury prevention coalitions or partnerships at the national, state, and local level; and the education and skills-building of children, parents, and caregivers.

### Evaluation

Refers to research, data collection, and surveillance to guide all programs and help determine the most effective behavior-changing strategies.

Working together, we have succeeded in reducing the death rate from fire and flame injury among children ages 14 and under by 56% between 1987 and 1998.

## Older Adults

*Presented by Roberta Null, PhD, Common Place Design, Whittier, CA*

Because Americans over age 60 will number almost 88 million by 2030, the aging of the population has colossal implications for our society. We need to take a Universal Design approach to ensuring safe, comfortable, convenient, and accessible dwellings for people of all ages, sizes, and abilities; not just the elderly! Organizations (including fire safety) wishing to survive in the twenty-first century will need to rethink their marketing strategies, their products, and their services to meet this burgeoning segment of consumers.

Marketing to a specialized “elderly” population can be like trying to reach a nonexistent group. After all, we generally consider “elderly” to be 15 years older than we are, whether we are 15, 55, or 85 years old! No one wants to be labeled as “old” or “disabled” so any products and/or services that are targeted for these groups are sure to meet with a lack of interest, at best! Universal Design is a general approach that provides maximum appeal and benefits for all age groups, rather than to a niche market such as the frail elderly or the disabled/wheelchair users. Therefore, sprinkler systems, smoke and fire detectors/alarms, and so on need to be integrated into Universal Design communication and education strategies.

Because Universal Design is invisible and inclusive, it will meet the needs of an aging population (and all others). This is an advantage, but also a challenge. It means that we need to show good examples of universally designed products and environments and explain why and how they incorporate Universal Design. We also need to be able to evaluate whether products can, to the greatest extent possible, be used by everybody.

Some basic questions related to Universal Design concepts would include the following:

1. Is it easy to use and take care of?
2. Is it adaptable? Can it be used in a variety of ways to accommodate a variety of users?
3. Is it accessible? No-step entrances are easy for wheelchair access and also provide easy access for others.
4. Is it safe?

When recommending improved fire safety for an aging population, it is essential that we understand the elderly, the aging process and their diverse range of abilities and needs.

#### Audience Characteristics

- Approximately half of those over age 70 experience some form of disability.
- Diminished physical abilities and senses associated with aging expose older adults to a multitude of fire and safety risks

#### Engineering—Technology

- Design sprinkler systems and smoke and fire detectors that are attractive, economical, easy to use and maintain (Universal Design).
- Design “smart stoves”—cooking is a leading cause of elderly fire injuries. A type of “smart stove” was a recent award winner in the Universal Design competition sponsored by ASA (American Society on Aging).
- New technology, such as iridescent inserts in flooring and baseboards, should be encouraged for new and remodeling installations.

#### Education

In addition to some of the outstanding programs for seniors that have been developed to promote fire and life safety, other programs should target design students and professionals, who also need to be educated about these issues. For example, a new annual national “Aging in Place: A Smart-Aging Residential Design Competition” for students should include fire and life safety considerations.

## People Who Are Blind or Have Low Vision

*Presented by Melanie Brunson, Director of Advocacy and Government Affairs,  
American Council of the Blind*

The biggest obstacle to safe egress for people who are blind or visually impaired is lack of information about the available means of safe egress. For instance, people may not know the location of emergency exits in public buildings. If they know where the exits are, they may not be able to determine whether the emergency situation has placed obstacles in their path that would prevent them from reaching an exit. Once information is available, most people who are blind or visually impaired would have the ability to exit an area, unless other conditions or disabilities not related to blindness or visual impairment are involved. Therefore, the greatest need of a blind or visually impaired person in an emergency situation is for someone to communicate information about the location of, and the means for safe egress.

Once an individual has information about where he/she needs to go, and possible obstacles that could hamper his/her progress toward that goal, the individual is in a better position to evaluate how much assistance may be needed, and to know to ask for it. A person with sight may also want to offer it at that point as well. When doing so, one should try to ascertain what kind of assistance the person who is blind or visually impaired needs. Ask, "How can I help?" A person with a guide dog may want to follow another person out, having the dog lead them. A person using a cane may want to take the arm of an assistant. This is not a given, however, as even guide dogs may become frightened and unable to lead, or a situation may warrant a sighted guide. The specific circumstances will give rise to different responses on the part of individuals. One cannot predict every circumstance that might arise in an emergency, so the key is to ask what the person needs, in an effort to ensure that assistance given is in fact safe.

Some other things that emergency personnel may wish to keep in mind include encouraging facilities that are open to the public to make a great effort to ensure that patrons know the location of emergency exits. In addition, more attention should be paid to making sure instructions for operating exit doors are clear. Braille and large print signage should be placed on exit doors in public buildings.

Finally, it should be noted that very loud alarms can be disorienting to individuals who rely on their ears to keep them oriented. The sound of such alarms can interfere with one's sense of direction, adding to confusion about where to go in response to the alarm.

### Conclusion

Communicate as much as you can and give the person who is blind or visually impaired the chance to communicate his/her needs in response. If there isn't time to talk and you believe swift action is needed, say so but try to give the person some idea as to why you believe this to be true. If both parties are working toward a mutually understood goal, they are much more likely to reach it safely.

## People Who Are Deaf or Hard of Hearing.

*The following is a brief synopsis of comments made to symposium participants by Fred S. Weiner, Special Assistant to the President for Planning, Gallaudet University.*

Mr. Weiner opened his remarks with a real-life story to best illustrate the measures of fire safety wanted and expected by people who are deaf or hard of hearing. His young daughter returned home from school after a lesson in fire safety that emphasized the need for smoke alarms. She said that she needed a smoke alarm. He assured her that they did have one. His daughter understood the recommendation made in her fire safety lesson and repeated that “she” needed an alarm too.

Mr. Weiner, his wife, and daughter are deaf requiring smoke alarms with visual notification. Their recently built home had one. The single smoke alarm with visual notification provided by the county was installed at one end of the house and not connected to any other notification device in other areas. The possibility of detection and notification of all members of the family allowing time for safe escape was not great. It was apparent that adequate fire protection had not been recommended or installed.

Mr. Weiner set out to the local mega-hardware store to find out what more was needed to protect his family. His trip, however, didn't end with a quick solution. To fully appreciate the problem, he told us that the cost of retrofitting smoke detection and notification devices throughout the house would be about equal to replacing the transmission in the family car, something that was also needed.<sup>4</sup>

The fire protection community has advocated the installation of smoke alarms on every floor of the house, and outside of bedrooms for years.<sup>5</sup> Mr. Weiner surely intended to protect his family and his home from fire and smoke but was not afforded the correct information or available materials to do so without great difficulty and expense. Mr. Weiner very convincingly showed us by example that people who are deaf or hard of hearing want what everyone wants, fire protection that is available and affordable.

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<sup>4</sup> Alarms currently on the market for people who are deaf or hard of hearing range in price from \$100-\$200 per unit.

<sup>5</sup> NFPA 72, *National Fire Alarm Code*®, and NFPA 101, *The Life Safety Code*®, recommend single-station smoke alarms in all sleeping rooms, outside of each sleeping area, and on each level of the dwelling unit.

# People with Physical Disabilities

*Presented by Michael C. Collins, Executive Director, California State Independent Living Council*

Good morning, and thank you for inviting me to speak with you about issues that impact people with physical disabilities in the event of fire. While the specific group I will be addressing is composed largely of those of us with mobility impairments, my comments can be applied to the broad spectrum of disabilities as well.

While traveling to Washington, DC, for this conference I noticed that the airline safety placard still contains directions that have been present for years. When you think of the absurdity of a statement that says, "If you cannot read or understand these instructions please advise the flight attendant immediately," it mirrors what happens to most of us in the event of a real emergency. We may be unable to understand the situation that is present, or may be unable to notify anybody about the problems we are facing.

Last week, while I was traveling in the Los Angeles area, one of the lead news stories was about a residential fire that involved a person who uses a wheelchair. Neighbors had rescued a man who was paraplegic from his burning apartment, as he was not able to contact anyone for assistance independently. Fortunately, his neighbors knew he was present in the building, and that he used a wheelchair. They made a heroic effort to pull him out of the burning apartment despite the fire.

Just yesterday, I learned about a visiting professor at a Boston University who uses a wheelchair, and who is housed in off-campus apartments on the seventh floor. The elevator in the apartment was out of service for over 30 days before a federal agency from Washington, DC, learned of the incident and contacted authorities in Boston to have the situation corrected. During that time this individual was at great risk in the event of any emergency, especially since he was living at a level that would not even be reachable by ladder trucks.

This morning there was a report in the paper about the arson investigation of an apartment fire in Colorado that injured 48 people. If there had been people with mobility impairments in those apartments, it is likely that there would have been even more injuries, or deaths, involved.

There are literally hundreds of thousands of people in this country who are unable to safely evacuate themselves in the event of a fire. I am one of those people, due to my quadriplegia, and even though I do everything possible to minimize the risk, it is still a dangerous situation. Not only am I unable to evacuate myself, I cannot do the simple things that most other homeowners can accomplish to create a safe living environment. I am unable to change the batteries in my smoke detectors, or even to check if the carbon monoxide detector is working. Fire extinguishers are unusable by me. In the event of a fire or other emergency, I must rely on a pre-dialed call to 911 in order to summon help that I hope will arrive in time.

Those of us with mobility impairments can be impacted in many ways. Some individuals have problems maintaining their balance; others may be paralyzed to different extents; or some have lost their stamina, and might react poorly in an emergency due to shortness of breath. These conditions can be caused by spinal cord injury, stroke, diseases like multiple sclerosis, muscular dystrophy, Alzheimer's and other dementias, or even heart disease. People who have cerebral palsy or who have had limbs amputated face the same challenges we do in an emergency.

Those of us who live alone must first assure that we are aware of fires and that we can then notify authorities in order to be evacuated in a timely manner. People without hand or arm movement who cannot use a telephone independently may rely on different methods for calling for help. Some individuals may use a mouth-stick to depress the telephone buttons, and others may have a voice-activated system. In the event of a fire we are all subject to the adrenaline rush that comes with panic and confusion. Adding in changes in lighting, the noise of a fire and the presence of smoke makes it even worse. Unless help arrives very quickly, many of us may not be evacuated in time.

There are many egress challenges present in our environment for people with mobility impairments, despite our best efforts to eliminate them. Fire codes sometimes conflict with accessibility standards, and it is common to find fire doors that are unable to be operated independently by many of us. Even the presence of panic hardware can be an insurmountable obstacle for a person with limited upper body mobility who uses a wheelchair. If areas of refuge are located in stairwells, it may be impossible for a person with a physical disability to open the door leading to that safe refuge. There are many steps that can be taken to mitigate these dangers. Fire-safe elevators are currently on the market, and they should be a required feature in every multistory setting.

An important step that can be taken in each community is to establish a computerized system for tracking the status and location of people who would require special assistance in an emergency situation. Since I live alone, and might be trapped in the back of my house should a fire occur, I would like my local fire department to know that I can be found in the bedroom in the northwest corner of the house with access through the sliding glass door. Believe me, having someone break that window with a fire axe in the event of an emergency would be the least of my problems. If it should happen that I was not at home when this fire occurred, I am sure that the local public safety agency would arrange to cover the window with plywood and leave me a note to explain the situation when I did return. While there are those who would argue that privacy concerns are an issue and that this information should not be available, it is important to remember that this is for public safety purposes and would be retained only within the 911 computer system in the local community.

Community education plays a big role. Is there awareness on the part of the community at risk that fire presents a real danger? A fire safety campaign should be directed at people with disabilities of all ages. Community organizations like independent living centers, area agencies on aging, regional centers, schools, and even advocacy organizations like the American Association of People with Disabilities, the National Council on Independent Living, and the American Association of Retired Persons can play a role. People need to live in safe environments and be prepared for the inevitable emergency when it occurs.

Public safety agencies can be a major part of this education effort. Their route for trainings should routinely include senior centers, independent living centers, and schools. While at those locations, they should ensure that people with disabilities who are present have an opportunity to ask detailed questions after the presentations. Public service announcements directed at the vulnerable population are another key component. Showing real-life disasters and interviewing those who were present can hold the attention of their peers who are watching the videos or television announcements. All public service announcements and videotapes should, of course, be captioned, as all of us can benefit from being able to read the narrative no matter how distracting our surroundings.

Part of any education campaign should be to train people to live safely. A network of community volunteers could be established to help educate seniors and people with disabilities about their home environment. These volunteers could maintain safety equipment such as smoke alarms, carbon

monoxide detectors and fire extinguishers, and evaluate kitchen safety, while watching for the presence of hazardous materials like newspapers, rubble, or rags stored unsafely. If these volunteers visited periodically, they could maintain a schedule to replace batteries and check carbon monoxide detectors, too.

Residential sprinkler systems are probably one of the best ways to improve safety for someone like me in the event of a fire. Unfortunately, the cost is still beyond most people with disabilities who live on fixed incomes, and there are currently no programs in place to pay for such installations. Creation of grant programs, including the establishment of low-interest loans and discount programs for people who have greater than minimum income, would help create a safer home environment. Another factor would be to provide significant discounts on fire insurance for those who install sprinkler systems in their homes.

In order to raise awareness of the risk to vulnerable populations when it comes to fire and similar emergencies, it will be necessary to identify the actual percentages of people who are injured or die in such incidents. The NFPA seems ideally suited to gather and disseminate that information. Anecdotal cases are also an important component, as we can all learn from what others have encountered.

Those of you who have chosen a profession of raising awareness about fire, increasing safety, and actually protecting the lives of the rest of us should be commended for your choices. It is important to remember, with approximately 80% of the population destined to face the impact of a significant disability in their lifetimes, that these at-risk populations are everywhere. We may have mobility impairments or disabilities of another type, but we are a common presence throughout the communities we all live in. Thank you for your time, and I look forward to spending the next two days working with you to develop more solutions to the challenges posed by fire.

## People with Mental Retardation and Other Cognitive Disabilities

*Presented by Sharon Davis, PhD, Director, Professional and Family Services,*

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*The following information is taken from the speakers' PowerPoint presentation.*

Cognitive disabilities affect a person's cognition, which is defined as the act or process of knowing, including awareness and judgment. This type of disability can be characterized by difficulties that affect the following:

- Awareness
- Memory
- The ability to learn
- The ability to process information
- The ability to communicate
- The ability to make decisions

Mental retardation is indicated by traumatic brain injury, learning disabilities, and dementia. It is a cognitive disability further defined by the following characteristics:

- It must be present from childhood since age 18
- Individuals must indicate an intellectual functioning level (IQ) below 70—75
- Individuals must be limited in two or more adaptive skill areas<sup>6</sup>

The following terms are sometimes used in place of “mental retardation”:

- Developmental disability
- Intellectual disability
- Cognitive disability
- Mentally challenged
- Mentally disabled

Great variation exists in how people are affected by mental retardation. Most people are only mildly affected. As such they may

- Live in the community in their own residence with supports as needed
- Have a job
- Enjoy community recreation

Those more severely affected require supports and may depend on direct support staff for many of their needs. Many remain in the family home. Some live in group settings with staff. Some receive 24-hour supports in their own residence.

People with mental retardation or other cognitive disabilities are vulnerable when it comes to fire emergencies because of the following:

- They have not been trained on safety
- Their judgment is impaired
- They may be dependent on caregivers
- They may not transfer learning to a new situation
- They may be unable to determine the best path to safety in emergency situations
- They may not remember what to do even if taught
- Their disabilities may limit their ability to take quick action to escape during a fire emergency

Some live in residential group settings and participate in a sheltered workshop program with others. Group living and working situations may increase vulnerability for the following reasons:

- Prompt evacuation of residential facilities or sheltered workshops can be hampered due to the number of residents and their particular disabilities.
- People with disabilities have often been excluded from the development and practice of escape plans and fire safety drills.
- In some cases, people with disabilities require the help of a caregiver.

Other living situations put people at risk because of the following:

- Families do not always make plans and teach the family member with a disability what to do in various home fire situations.
- Many people now live relatively independently in their own apartments with a minimum of supervision and may not be trained on fire safety.

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<sup>6</sup> Adaptive skills are communication, self-care, home living, social skills, leisure, health and safety, self-direction, functional academics, community use, and work.