

COLLABORATION BETWEEN VULNERABLE PEOPLE, HEALTHCARE PROFESSIONALS, AND RESEARCHERS ENHANCES DISASTER RESPONSE CHOICES

Hyogo Framework Priority of Action

This project demonstrated how collaboration between volunteers from vulnerable populations, healthcare professionals, and researchers can strengthen disaster preparedness for effective response at all levels. It supports Strategic Goal III of the pre-zero draft of the post-2015 Hyogo framework to strengthen persons and communities to minimize disaster impacts.

Abstract

Communities that may experience airborne toxic plumes can help residents prepare to react immediately until danger has passed. “Expedient sheltering” requires reducing air flow into a safe room by employing readily available supplies. But disabled and other people with access or functional needs can have difficulty handling the normally-recommended materials. Vulnerable people and researchers collaborated with healthcare professional support in this successful project to find easier-to-apply alternates.

Context

People at risk of exposure to sudden airborne hazardous vapor contamination from nearby facilities must be prepared to respond rapidly. They can protect themselves by sealing a room to reduce air infiltration until the plume passes. Figure 1 illustrates the conventional expedient sheltering method employing duct tape and plastic sheeting. Cutting plastic sheeting into covers for windows, doors, and vents, and applying duct-tape strips to secure the covers is fairly easy for the general public. However, those with disabilities or other access or functional needs may find these steps too difficult during emergencies.

Location

This work was done in the United States of America at Hobson City, Alabama, Oxford, Alabama, and Lemont, Illinois.

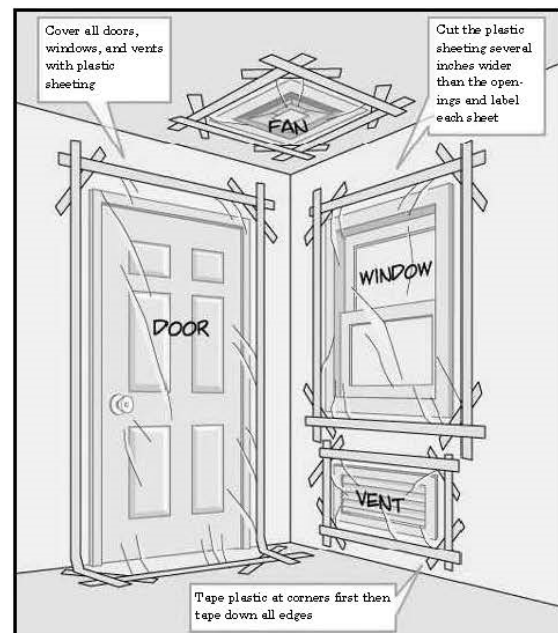


Figure 1: Expedient sheltering can be difficult or stressful for people with disabilities or other vulnerabilities. Reprinted from Journal of Emergency Management. Used with permission.

How the Problem Was Addressed

The research included two steps. First, the protective capabilities of five alternate sheltering-in-place materials were compared. These included the plastic sheeting/duct tape combination, painter's tape, self-adhering laminate (contact paper), plastic film/adhesive, and foam weather strip. Tests were conducted in a simulated shelter—a bedroom (14.5 m²) with adjoining bathroom (3.7 m²) in a one-story brick cottage. Test materials were applied to the three windows and an interior door. A diluted nontoxic tracer gas was injected into the space and dispersed. Decay of the tracer gas concentration was continuously measured between the starting and ending concentrations (25,000 to 2,000 ppb).

Second, hands-on tests of application by elderly and disabled residents were facilitated by healthcare professionals at two senior centers. Self-adhering laminate, painter's tape, and foam weather strip were demonstrated, and volunteers practiced their application on a mock window. Participants then identified their preferred materials.

Results

The tracer gas tests showed that painter's tape and self-adhering laminate were at least as effective under the test conditions in reducing air infiltration as plastic sheeting and tape. Overwhelmingly, volunteer participants preferred self-adhering laminate, with some selecting painter's tape. Afterwards, their communities permitted inclusion of these materials in preparedness kits distributed to local residents.

Measuring Success

The key to project success was its rigorous air infiltration measurement method combined with volunteer participation of disabled and other vulnerable people whose needs were recognized by healthcare professionals.

Relevance to Hyogo Action Framework

This project enabled local communities—relying on sound research facilitated by healthcare professionals—to include readily-available tools selected by people with disabilities and other access and functional needs as part of their disaster preparations. It shows the feasibility of implementing the structure in the pre-zero draft of the post-2015 Hyogo Framework for Action, notably paragraphs 14(g) on community-based capacity-building and 16(a) on designing preparedness measures that include the most vulnerable.

Potential for Replication

This initiative could be reproduced using structures and alternative materials prevalent in other environments, supported by people with additional access or functional needs and local healthcare professionals.

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