



Testimony
Subcommittee on Disaster Recovery and
Subcommittee on State, Local, and
Private Sector Preparedness and
Integration,
Committee on Homeland Security and
Government Affairs
United States Senate

**CDC's Response to Health Concerns Related to FEMA-
Provided Travel Trailers and Mobile Homes in the Gulf
Coast Region**

Statement of
Howard Frumkin, MD, DrPH
Director, National Center for Environmental
Health/Agency for Toxic Substances and Disease Registry
Centers for Disease Control and Prevention
U.S. Department of Health and Human Services



For Release on Delivery
Expected at 10:00 a.m.
Tuesday, March 4, 2008

Introduction

Good morning Chairpersons Landrieu and Pryor and other distinguished Members of the Committee. Thank you for the opportunity to be here today. I am Dr. Howard Frumkin, Director of the National Center for Environmental Health/Agency for Toxic Substances and Disease Registry (NCEH/ATSDR) at the U.S. Centers for Disease Control and Prevention (CDC).

Today, I will describe our interim results of indoor air quality in occupied travel trailers and park and mobile homes provided by FEMA for use as temporary housing in the Gulf Coast region. I will also discuss our current and planned activities to evaluate further health concerns related to FEMA-provided travel trailers and park and mobile homes.

Background

FEMA officially requested CDC assistance in answering questions related to indoor air quality of the travel trailers and park and mobile homes provided by FEMA, and the health of the occupants of those units, in a letter to CDC Director Dr. Julie Gerberding dated July 13, 2007. Following discussions with FEMA and the Department of Homeland Security, CDC identified and initiated several public health response actions.

Health concerns related to possible formaldehyde exposure have been communicated by residents of FEMA-provided travel trailers and park and mobile homes. Formaldehyde is a colorless, flammable gas that has a distinct, pungent

smell. It is used in the production of fertilizer, paper, plywood, and urea-formaldehyde resins. Formaldehyde is also produced by cigarettes and other tobacco products, gas cookers, and open fireplaces. Finally, formaldehyde is used as a preservative in some foods and in many products used around the home. Formaldehyde can cause irritation of the eyes, nose, throat, and skin. The International Agency for Research on Cancer has determined that formaldehyde may reasonably be anticipated to be a carcinogen.

Formaldehyde levels to which people are typically exposed can vary widely. In general, formaldehyde levels in indoor air have been declining since the mid-1980s because of improvements in construction materials and practices. A study conducted between 1999 and 2001 of 300 homes of different types in 3 cities found a mean level of formaldehyde of 3 ppb for outdoor ambient air and 30 ppb for indoor air concentrations. While this study was not designed to be nationally representative (for example 75% of homes did not have indoor carpet), these data represent some of the best available recent information.

There is no specific level of formaldehyde that separates “safe” from “dangerous.” We have not cited here the various exposure limits that have been developed for formaldehyde because they are widely variable and none relate directly to occupied trailers; however, as the formaldehyde level rises, the risk of health consequences rises. At higher levels, people could have acute symptoms such as coughing and irritated eyes and throat. Even at levels too low to cause symptoms, there could be an increased risk of cancer.

It is important to note that formaldehyde is not the only potential health issue related to living in temporary housing units. Other potential health issues for temporary housing residents relate to mold and moisture, safety concerns, mental health issues, and disruption of day-to-day lives. CDC continues to consider the range of health issues that are important to public health. CDC's goal for healthy homes is to protect and promote health through safe and healthy home environments. The efforts to address these broader health concerns related to FEMA-provided temporary housing fit within this goal by employing a more holistic approach to health and housing issues. As with other CDC Healthy Homes programs, such as the Childhood Lead Poisoning Prevention Program and the program to prevent carbon monoxide poisoning following disasters, CDC seeks to identify health concerns and potential threats and to develop targeted prevention programs. We will continue to work with FEMA, community-based organizations, and residents to address the unique health concerns related to temporary housing and relocation.

Testing Results for Occupied Travel Trailers and Mobile Homes

One critical action CDC undertook was testing of currently occupied travel trailers and park and mobile homes. The purpose of this testing was to assess levels of formaldehyde in indoor air of occupied travel trailers and park and mobile homes provided by FEMA as temporary housing for displaced residents of the US Gulf Coast Region in Mississippi and Louisiana following Hurricanes Katrina and Rita.

CDC tested a statistically valid random sample of 519 travel trailers and park and mobile homes in Mississippi and Louisiana between December 21, 2007, and January 23, 2008. The interim evaluation of the data from those tests revealed the following key findings:

- In many of the travel trailers and park and mobile homes tested, formaldehyde levels were higher than typical levels (based on recent sampling) of US indoor exposure in single-family homes and apartments.
- Average levels of formaldehyde in all units were about 77 parts per billion (ppb). This level is higher than US background levels in single-family homes and apartments and, at the levels recorded in many travel trailers, health could be affected. Levels measured ranged from 3 ppb to 590 ppb.
- These contemporary measured levels are likely to under-represent long-term exposures because formaldehyde levels tend to be higher in newer travel trailers and park and mobile homes and during warmer weather.
- Higher indoor temperatures were associated with higher formaldehyde levels in this study, independent of trailer make or model.
- Formaldehyde levels varied by type (mobile homes, park homes, and travel trailers), but all types tested had some elevated levels compared to recent data on single-family homes and apartments.

It is important to note that the findings are based on a sampling conducted only for those units provided by FEMA and currently in use in Mississippi and Louisiana. Other trailers used elsewhere could differ based on their age, the characteristics of their manufacture, the circumstances of their use, or the

characteristics of their environment. For example, because temperature and humidity affect formaldehyde levels, travel trailers and park and mobile homes in cooler, drier climates may have different levels.

Based on this study's interim findings, CDC issued recommendations for both public health officials and residents. Specifically:

Recommendations for Public Health, Emergency Response, and Housing

Officials

- These conclusions support the need to move quickly to relocate residents before the weather in the region warms up. The highest priority should be persons who are:
 - o Currently having symptoms that could be attributed to formaldehyde exposure;
 - o Especially vulnerable (i.e. children, the elderly, and those with chronic diseases); and/or
 - o Living in FEMA-provided trailer types that tend to have higher formaldehyde levels.
- Appropriate follow-up will require multi-agency collaboration including FEMA, the U.S. Department of Housing and Urban Development (HUD), CDC, and others, to achieve safe, healthy housing for people displaced by Hurricanes Katrina and Rita who continue to live in FEMA-provided travel trailers and park and mobile homes.

- FEMA and CDC will consider supporting the establishment of a registry to conduct long-term health monitoring of children and others who resided in FEMA-provided travel trailers and park and mobile homes in the Gulf Coast Region.

Recommendations for Residents Still Living in FEMA-Provided Travel Trailers and Park and Mobile Homes

- Families who live in FEMA-provided travel trailers and park and mobile homes should spend as much time outdoors in fresh air as possible.
- Open windows as much as possible to let in fresh air.
- Try to maintain the temperature inside travel trailers and park and mobile homes at the lowest comfortable level.
- Do not smoke, especially inside.
- If you have health concerns, see a doctor or another medical professional.
- Families that include children, the elderly, and those with chronic diseases such as asthma should make a special effort to get as much fresh air as possible.

CDC has notified all study participants in person of their individual findings and is currently conducting public availability sessions in both Louisiana and Mississippi to provide information to other concerned and interested individuals. CDC's 24-hour toll-free hotline (1-800-CDC-INFO) responded to more than 1,000 calls last month and continues to be a resource for health-related questions from residents. In addition, CDC is providing educational materials for residents of

travel trailers and park and mobile homes about their risk of exposure to formaldehyde and ways to improve their indoor air quality and health.

These findings are preliminary. A final report is expected to be published in the spring of 2008. This report will also include information about other factors that may affect formaldehyde levels as well as more complete information about formaldehyde levels in each type of unit.

Additional On-going and Future CDC Activities

CDC has additional activities on-going, as well as a number of planned future activities related to FEMA-provided travel trailers and park and mobile homes.

Unoccupied Travel Trailers and Mobile Homes

CDC has an approved protocol to assess formaldehyde levels across different models and classes of unoccupied travel trailers and park and mobile homes purchased by FEMA. The purpose of this sampling is to identify factors that may predict high exposure scenarios inside the units and to investigate cost-effective solutions to reduce formaldehyde concentrations. In addition, data analysis is underway regarding components of travel trailers and park and mobile homes that were tested for off-gassing of formaldehyde. FEMA provided the units to be tested. CDC collected the samples of travel trailer and park and mobile home components for testing at Lawrence Berkeley National Laboratory under an interagency agreement.

Child Health Investigations

Pediatricians in Mississippi and Louisiana first brought the possibility of health effects associated with living in travel trailers and park and mobile homes purchased by FEMA to the public's attention. These physicians observed respiratory and skin symptoms in their patients that they thought might be associated with living in the trailers. Investigating potential implications for children's health is an important component of CDC's overall investigation.

The goal of the children's health investigations is to determine if adverse children's health effects, such as respiratory illness and dermal reactions, are associated with living in a travel trailer, park home, or mobile home purchased by FEMA in a storm-damaged region of the U.S. Gulf Coast. CDC has described two health investigations, one well underway, and the other in development:

- CDC has conducted a chart review of available medical records of children who were treated for respiratory illness, skin conditions, or gastrointestinal illnesses in Hancock County, Mississippi. CDC scientists conducted field work in November 2007 with all pediatric health care providers in the county. Data analysis and follow-up interviews have been completed and the report is being finalized.
- CDC is also planning a cohort study of children who were affected by Hurricanes Katrina and Rita and who, as a result, lived in travel trailers and park and mobile homes purchased by FEMA in areas of Alabama,

Louisiana, Mississippi, and Texas. CDC will recruit children from those households who received housing assistance from FEMA in the form of a travel trailer or park or mobile home and will follow participating children for approximately five years. CDC is currently completing the protocol for the study. The protocol will be peer-reviewed prior to submitting it for Institutional Review Board (IRB) approval in April.

Expert Panel Review

CDC convened an independent panel of experts in September 2007 to provide the best scientific knowledge about indoor air quality in travel trailers and mobile homes used as emergency housing. The panel also offered individual advice and guidance regarding the development of methods for CDC's recent testing of travel trailers and park and mobile homes. CDC has posted a summary of the panel's recommendations at:

<http://www.cdc.gov/nceh/ehhe/trailerstudy/pdfs/FEMAExpertPanelSummary.pdf>

CDC will reconvene an expert panel later this year to discuss the results of the indoor air quality assessments and the protocol for the proposed child health study.

Health Communication

Health education and communication are critical component of CDC's response. The goal of CDC's health communication program is to educate and inform by providing residents with information to help them in making decisions about where to live and how to reduce health risks. In addition to providing health

information directly to residents, CDC has worked closely with FEMA to develop and implement communications strategies to keep residents informed of activities that could affect their health.

Teams of communication specialists from CDC have spent time in Louisiana and Mississippi meeting with community-based organizations, community leaders, and health care providers to better understand the health information needs of residents living in FEMA-provided travel trailers and mobile homes.

CDC has developed a series of printed materials in multiple languages to assist both residents and health care providers. The materials provide information about formaldehyde as well as other indoor air quality issues and help residents assess their level of risk and understand how to reduce it. CDC also has developed messages for radio and other audio distribution. These materials are available online at www.cdc.gov/nceh/ehhe/trailerstudy.

Conclusion

Since receiving the official request from FEMA in July 2007, CDC has responded with a multi-part approach to assess actual exposures, determine whether feasible methods exist to reduce formaldehyde levels, develop knowledge and understanding of health effects in vulnerable populations, and provide residents and health care providers with health information to recognize and reduce health effects potentially related to indoor air quality issues. CDC continues to assess

the health concerns related to the aftermath of the hurricanes along the Gulf Coast, and the larger implications of these concerns.

The interim results of CDC's testing of occupied travel trailers and park and mobile homes purchased by FEMA support the need to move quickly to relocate residents as soon as possible. It is important to note that the findings are based on a sampling conducted only on those units provided by FEMA and currently in use in Mississippi and Louisiana. Therefore, these findings cannot be generalized to include all travel trailers and park and mobile homes. We do not know whether these findings would be representative of findings in a similar study of travel trailers and park and mobile homes in other circumstances. However, we recognize that more needs to be done to understand the health and safety issues for all people living in trailers and park and mobile homes, both in FEMA temporary housing and in other units bought commercially, including not only units used as homes, but also those serving as temporary classrooms and offices. CDC has initiated discussions with FEMA and HUD on these issues. Since some trailer types had relatively low levels, we believe that construction practices are available that could assure safe, healthy conditions. We hope to provide technical input to help achieve that kind of housing for all Americans who live, learn, or work in these units.

We agree with FEMA that displaced residents should be moved into permanent housing. CDC's goal is to help residents reduce risks to their health until then and to protect their health during the process of relocating to permanent housing.

Thank you for the opportunity to provide this testimony on CDC's activities related to health concerns and FEMA-provided travel trailers and mobile homes. I would be happy to answer any questions you may have.