



**Testimony**  
**Before the Committee on Science and**  
**Technology**  
**Subcommittee on Oversight and**  
**Investigations**  
**United States House of Representatives**

**Formaldehyde Sampling of FEMA-  
Provided Temporary Housing Trailers**

*Statement of*

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Good morning Chairman Miller, Mr. Sensenbrenner, and other distinguished Members of the Subcommittee. Thank you for the opportunity to be here today. I am Dr. Howard Frumkin, Director of the Agency for Toxic Substances and Disease Registry (ATSDR) and the Centers for Disease Control and Prevention's (CDC's) National Center for Environmental Health (NCEH). ATSDR and CDC/NCEH are separate Department of Health and Human Services agencies that are managed jointly from an administrative perspective. I am accompanied by Dr. Thomas Sinks, Deputy Director of ATSDR and CDC/NCEH.

I am a physician with 26 years of experience in environmental and occupational medicine and epidemiology. I have been Director of NCEH/ATSDR since September 2005. Previously, I served as chairman of the Department of Environmental and Occupational Health at Emory University's Rollins School of Public Health and professor of medicine at Emory Medical School. Dr. Sinks is a career CDC epidemiologist, having served in scientific and leadership positions for more than 23 years.

We share with the members of the Subcommittee a common goal - to serve the public, and to bring to bear the best science in doing so. As public servants, we are accountable for achieving this goal. I am very proud of our overall efforts to protect public health following Hurricanes Katrina and Rita, including our more recent efforts related to formaldehyde in Federal Emergency Management Agency (FEMA)-provided travel trailers, park and mobile homes (hereafter

referred to as trailers). I recognize that in some respects we could and should have done better. There are key lessons to be learned, and we have taken important steps to ensure that our current and future work reflects those lessons we have learned. Our testimony will focus on three areas.

First, I will provide an overview of NCEH/ATSDR activities and accomplishments related to Hurricane Katrina in general and formaldehyde and FEMA-provided trailers in particular.

Next, I will discuss events leading to the original (2/07) ATSDR health consultation and management decisions during this period, and describe measures we have taken to ensure that as we move forward our work reflects lessons learned.

Finally, I will summarize CDC/ATSDR ongoing and future scientific endeavors to further expand our understanding of, and ability to address, public health impacts of formaldehyde in FEMA-provided trailers.

**Overview: NCEH/ATSDR Accomplishments and Activities Regarding Hurricane Katrina, Formaldehyde, and Health**

Under the leadership of the CDC Director's Emergency Operations Center, CDC and ATSDR took a wide range of actions to protect the public against even

greater health impacts from devastation caused by Hurricanes Katrina and Rita.

Our Agencies' contribution to the broader disaster response included --

- Deploying hundreds of CDC and ATSDR staff to the Gulf Coast region to provide hands-on technical support.
- Staffing emergency response operations with several hundred full-time staff to manage and triage requests for assistance from state and local health departments and other local partners.
- Taking measures to ensure early detection of possible epidemics of infectious diseases and providing real-time guidance on how to control and prevent future outbreaks.
- Monitoring the health needs of people in shelters and providing printed public health education information.
- Protecting the health of emergency responders.
- Evaluating vaccination needs and practices.
- Supplying materials and medications through the National Pharmaceutical Stockpile.
- Providing up-to-date communication materials to health professionals, the media, and the public.

NCEH/ATSDR served as the CDC/ATSDR lead for environmental health aspects of the response to Hurricanes Katrina and Rita. The list below provides several examples of NCEH/ATSDR accomplishments and other contributions.

- Supported federal, state and local officials in restoring environmental public health services (safe drinking water, food safety).
- In coordination with the Environmental Protection Agency (EPA), evaluated all Superfund sites in the area for hazards and assessed industrial facilities to identify hazardous conditions related to hurricane damage.
- Anticipated and assessed well established hazards in indoor environments related to carbon monoxide poisoning and mold.
- Collaborated in assessing numerous community and individual facilities such as schools to clear them for re-entry.
- Conducted state-of-the-art assessment of environmental sampling data for human health implications and made health recommendations to federal, state and local health and environmental officials.

In May of 2007, CDC launched a formal program to address the formaldehyde health concerns in FEMA-provided trailers. The program is led by the director of the Division of Environmental Hazards and Health Effects within NCEH, with oversight from Dr. Sinks and me. We also developed an interagency agreement with FEMA to support the NCEH activities. The program has several components, described below:

- Expert Panel: We established an expert panel to obtain individual guidance in developing CDC's methods for studying aspects of formaldehyde exposure.

- Study of Occupied Trailers: Through an Interagency Agreement with FEMA, CDC is conducting a formal study that included testing formaldehyde levels in 519 occupied FEMA-provided trailers in Mississippi and Louisiana.
  - Interim results were announced on February 14, 2008. The formaldehyde levels in indoor air were higher than typical (based on recent data) levels of U.S. indoor exposure in single family homes and apartments.<sup>1</sup>
  - Results were presented in person to occupants of each of the 519 trailers that were tested as part of the study, with assistance of the United States Public Health Service Commissioned Corps. FEMA housing staff also participated in these visits.
  - CDC/ATSDR recommended that individuals and families be relocated from FEMA-provided trailers in the Gulf Coast Region before warmer weather returns, based on these interim findings. We also provided guidance on setting priorities for relocation.
  - On March 3, 2008, we released a more detailed interim report (available on our website at <http://www.cdc.gov/Features/FEMATrailersFindings/>). The interim report provides additional findings, including formaldehyde levels by trailer type and manufacturer.

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<sup>1</sup> While this study was not designed to be nationally representative (for example 75 percent of homes did not have indoor carpet), these data represent some of the best available recent information.

- We expect to issue a final report this Spring. This report will contain a more detailed analysis than in the interim report.
- Communications:
  - Our communication project team responded to more than 6,000 calls for information related to formaldehyde and/or FEMA-provided trailers since July 2007.
  - More than 1,000 persons attended 15 public availability sessions in Louisiana and Mississippi to learn about the results of CDC's formaldehyde sampling of FEMA-provided trailers.
  - Health education materials were aggressively distributed in locations frequented by residents of FEMA-provided trailers.
  - New information has been released rapidly and made available on CDC's Web site.
- A chart review has been conducted of medical records of children living in Hancock County, Mississippi, in 2005-2007, for respiratory illness, skin conditions, or gastrointestinal illnesses. The review is expected to be completed in the near future.
- Studies of Unoccupied Trailers: CDC is assessing formaldehyde levels across different models and classes of unoccupied travel trailers and mobile homes used by FEMA as temporary housing. 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 the formaldehyde concentrations. CDC is conducting additional work:

- With the Lawrence Berkeley National Laboratory, to test components of unoccupied trailers from FEMA's inventory for off-gassing of formaldehyde.
- With NASA, to evaluate potential methods to mitigate formaldehyde levels in trailers.
- To test unoccupied trailers to determine formaldehyde levels by manufacturer, time of day, and temperature.

### **Retrospective Look at the ATSDR Health Consultation**

The information below reflects the facts and events as I currently understand them regarding the February 2007 ATSDR health consultation and measures we have taken to insure that our work moving forward reflects lessons learned.

In July 2006, a representative of EPA contacted members of ATSDR's Division of Toxicology and Environmental Medicine (hereafter referred to as Division of Toxicology) requesting that ATSDR participate in a conference call with representatives of FEMA. The purpose of the call was to discuss EPA's sampling for formaldehyde in FEMA-provided unoccupied trailers.

After the initial contact, the Acting Deputy Director of NCEH/ATSDR's Office of Terrorism Preparedness and Emergency Response (hereafter referred to as Office of Emergency Response), who was also NCEH/ATSDR's coordinator for Hurricane Katrina-associated actions, informed Dr. Sinks of the request for



ATSDR participation in discussion with EPA and FEMA regarding EPA sampling of formaldehyde. This request was handled by staff of ATSDR's Division of Toxicology who routinely handled emergency requests. At the time, the request for assistance appeared to be consistent with previous efforts to support EPA in the aftermath of Hurricanes Katrina and Rita, and Dr. Sinks encouraged agency involvement.

During the next several months, staff of ATSDR's Division of Toxicology managed and handled ATSDR's involvement in regular communications with representatives of FEMA and EPA on this issue. Specifically, the staff participated in conference calls with EPA and FEMA concerning sampling plans for measuring formaldehyde levels in unoccupied trailers. The resulting sampling design involved 96 unoccupied travel trailers newly purchased by FEMA. The specific role of staff of the Division of Toxicology was to interpret the data generated by EPA sampling activities in order to: (1) evaluate levels of formaldehyde measured by EPA in closed, unoccupied trailers; and (2) determine whether two mitigation strategies (opening windows and running air conditioning) would substantially reduce formaldehyde levels. Staff of the Division of Toxicology regularly listed this project in their routine report of activities distributed through supervisory and management channels.

EPA sampled the trailers in October 2006, and provided the data to FEMA on November 17, 2006. FEMA transmitted the data to staff of ATSDR's Division of

Toxicology on December 1, 2006, for analysis. The data were accompanied by a cover letter from a FEMA attorney who had participated in the interagency conference calls regarding testing for formaldehyde in trailers. The letter did not restrict the scope of ATSDR's analysis or conclusions, nor am I aware of any communication from FEMA attempting to impose such a restriction.

Upon completion of a draft of the report, Division of Toxicology staff provided a copy to the coordinating office for response activities related to Hurricanes Katrina and Rita, the Office of Emergency Response. Staff from that Office reported this status in early January 2007 at a routine meeting with Dr. Sinks and me. A follow-up e-mail from the Office of Emergency Response suggests that I looked at the draft report during the meeting and noted the absence of an executive summary and conclusions/recommendations. Following the meeting Dr. Sinks read the draft and provided handwritten comments on the hard copy. Those comments were relayed to the Division of Toxicology staff working on the project and they finalized the document. In his role as coordinator of our continued response to hurricanes Katrina and Rita, the Acting Director of the Office of Emergency Response transmitted the health consultation to FEMA on February 1, 2007.

As noted earlier, the focus of ATSDR's analysis was narrow. As stated in the health consultation, "FEMA has not requested ATSDR to evaluate longer-term formaldehyde concentrations in trailers or health concerns related to potential

exposures. ATSDR will be available to provide assistance if such data becomes available in the future.”

In late February 2007, Dr. Christopher DeRosa, Director of the Division of Toxicology, notified Dr. Sinks that he had only recently reviewed the health consultation. Although this project was listed in regular reports of work in his Division, he stated that he had not seen the document previously and that it failed to address the potential long-term health consequences related to chronic exposure to formaldehyde. The Director of the Division of Toxicology had not raised this concern to staff in his Division earlier, prior to release of the report. Regarding health consequences of long-term exposure, I concurred with this concern once it was raised to me. I encouraged the Division Director to draft a letter to FEMA highlighting ATSDR's concerns and clarifying the scope of the health consultation. The letter, dated March 17, 2007, states:

“I am concerned that this health consultation is incomplete and perhaps misleading. Formaldehyde is classified as ‘reasonably anticipated to be a human carcinogen.’ As such, there is no recognized safe level of exposure. Thus any level of exposure to formaldehyde may pose a cancer risk regardless of duration. Failure to communicate this issue is possibly misleading and a threat to public health.”

During a hearing held by the House Committee on Oversight and Government Reform in July 2007, a witness questioned the “level of concern” referenced in the February 2007 ATSDR health consultation. This prompted a careful re-evaluation of the report. That re-evaluation revealed several issues. First, the report did not make sufficiently clear that the purpose of the health consultation

was very narrow--characterizing formaldehyde levels in closed unoccupied trailers and the effect of two mitigation strategies. Second, ATSDR's use of a "level of concern" provided a false impression of what constitutes an acceptable health risk, further contributing to misinterpretation. Third, the analysis had not examined how formaldehyde levels varied by manufacturer, time of day, or temperature.

In August 2007, because of these and other issues, Dr. Sinks recommended that the data be reanalyzed and the report completely rewritten. I concurred and in October the revised report was released. Both the original report and the final report remain available on the ATSDR Web site at:

[http://www.atsdr.cdc.gov/substances/formaldehyde/public\\_assessment.html](http://www.atsdr.cdc.gov/substances/formaldehyde/public_assessment.html).

### **Lessons Learned**

CDC/ATSDR recognize that our agencies should have moved more forcefully to address the emerging concern related to formaldehyde levels in FEMA-provided trailers, particularly as it became apparent that people were living in them for longer periods of time, not as a short term solution as they had been widely considered in the past. As Director of NCEH/ATSDR, I accept responsibility for shortfalls in our response, and for taking steps to prevent similar situations in the future.

Issue: We addressed formaldehyde exposures too slowly and too narrowly.

Issue: The initial health consultation fell short of our own standards.

Lessons Learned/Actions Taken: Hurricane Katrina presented many scientific and organizational challenges. Through this experience, we identified gaps in how scientific work is assigned, supervised, and reviewed.

We have taken responsibility ourselves and have directed all of our managers to implement several steps to address these issues. These include:

- Triaging key assignments to appropriate scientific staff depending on the content of the request and staff expertise
- Providing appropriate scientific and supervisory oversight of all staff
- Applying consistent peer review across all divisions

We have also requested that our Board of Scientific Counselors examine our review and clearance process for all scientific materials, and we have commissioned an external review of management procedures to identify opportunities for improvements.

Finally, all of our staff have been asked to make sure that any contacts with other agencies are directed through the most appropriate channels to insure consistent and correct communication.

## **Moving Forward**

CDC/ATSDR now recognize formaldehyde in FEMA-provided trailers as an important public health issue, and have made research in this area a high priority to which we are devoting a tremendous amount of effort and are making significant progress. Beginning in May of 2007, before the hearing that prompted us to revisit the health consultation and reissue the report in October 2007, and continuing today, NCEH's Division of Environmental Hazards and Health Effects has been proceeding with a broad set of formaldehyde-related activities. These activities are being conducted with the full support of the NCEH Division Director as well as Center, Coordinating Center and Agency-wide leadership. And, we have an extensive and transparent communication network through which we are keeping policy makers and the public apprised of our activities and findings.

CDC/ATSDR will continue to build the science base and to protect public health from formaldehyde exposures in indoor environments. To help clarify the health impacts of formaldehyde exposure, we are planning several additional activities, including:

- A five-year study of children who resided in FEMA-supplied trailers in Alabama, Louisiana, Mississippi, and Texas is being initiated; the protocol currently is under review.
- A broad and proactive approach to formaldehyde in manufactured structures. We have reached out to FEMA, HUD, and other partners, and will collaborate with them in addressing this multi-jurisdictional challenge.

- A registry/census of current and former residents of FEMA-provided trailers, which would facilitate communication with them in the future. For example, this could facilitate conducting future studies.

In summary, CDC/ATSDR remains firmly committed to building the science base and protecting public health from formaldehyde exposures in indoor environments, and more broadly, to helping assure safe, healthy indoor environments for all Americans. These are all important issues to assure that science and public health are fully addressed and CDC looks forward to the opportunity to work with the Committee on these important issues.

### **Conclusion**

As we continue our ongoing research, we recognize fully our obligation to the American public, to Congress, and most importantly to residents of the travel trailers, to deliver the independent, credible science that helps inform good decision-making by the individuals who were displaced by Hurricanes Katrina and Rita.

Thank you for the opportunity to present this information to you today. We would be happy to answer any questions.