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Response to Concerns of Formaldehyde in FEMA Travel Trailers

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Good morning. Thank you for this opportunity to testify today before the Committee on Science and Technology. My name is Dr. Heidi Sinclair, Assistant Professor of Pediatrics with the Louisiana State University Health Sciences Center (LSUHSC) and Medical Director of the Baton Rouge Children's Health Project. I am here today at the request of the Committee on Science and Technology as a health-care provider, community pediatrician, and advocate for vulnerable children. The views expressed herein do not reflect the views and opinions of LSUHSC.

Background

I was living in New Orleans at the time of Hurricane Katrina and relocated to Baton Rouge in June of 2006 to accept the position of Medical Director of the Baton Rouge Children's Health Project, a unique and innovative partnership of LSU Pediatrics in Baton Rouge and The Children's Health Fund. The Children's Health Fund is committed to providing health care to the nation's most medically underserved children and their families through the development and support of primary care medical programs such as the Baton Rouge Children's Health Project.

Our project, established the fall of 2006, has two professionally staffed mobile medical units, "doctors' offices on wheels," providing comprehensive primary pediatric medical and mental health care through 4,968 encounters to over 400 children and families displaced to the Baton Rouge area. Services are provided weekly or bi-monthly at a number of FEMA group sites. Prominent among these is Renaissance Village, the largest FEMA trailer village in Louisiana with nearly 600 travel trailers and estimates of 1,500 to 2,100 residents at peak.

Formaldehyde Exposure and FEMA Trailer Sites

As FEMA trailer group sites were established and families were moved into these travel trailers, a number of concerns were expressed regarding the safety and suitability of both the travel trailers and the group sites themselves. Regarding formaldehyde, a colleague initially raised concerns to the Children's Health Fund and to Louisiana congressional staff during a legislative visit in May of 2006.

We were concerned then as we are now that people living in these trailers are continually being exposed to formaldehyde, which is most readily absorbed through the respiratory tract (by breathing), with most exposures occurring through inhalation, and skin or eye contact. Indoors, a major source of formaldehyde is off-gassing from particle board and urea-foam insulation.

Symptoms

The most common associated symptoms of formaldehyde exposure include neurological problems, such as headaches, depression, and insomnia as well as skin rashes, eye irritation, sinus problems, recurrent colds and nose-bleeds. Long-term consequences can include changes to the immune system and development of certain cancers.

Since we began seeing patients at the FEMA trailer villages, the most common presenting problems have, in fact, included: skin rashes, sinus problems and recurrent colds, headaches, fatigue, depression, insomnia and attention deficits. Some patients also have recurrent nose-bleeds, stomachaches, nausea, eye irritation and respiratory problems. All of these symptoms are consistent with formaldehyde exposure. These symptoms admittedly are non-specific and not uncommonly encountered in a general pediatric population. However, formaldehyde cannot be ruled out as a contributing factor, even when considering the FEMA trailer park population's association with stress, poor nutrition, and exposure to other allergens such as mold or irritants.

Exposure Levels

While the Agency for Toxic Substances and Disease Registry (ATSDR) lists 0.008 ppm (8 ppb) as minimal risk level for long-term (>365 day) formaldehyde exposure, it is important to emphasize that much remains unclear about formaldehyde. Some persons, for example, will experience symptoms at levels as low as 0.05 ppm while others will have no symptoms even at much higher levels. Most studies of human exposure to formaldehyde have reviewed adult, acute high level or 8-10 hour occupational exposure – there have been fewer studies on health effects of elevated indoor air levels of formaldehyde in homes, and almost no studies of its effects on children.

Formaldehyde and Children

Nonetheless, children, particularly the youngest, are more likely to be affected by even low-level exposure to formaldehyde because they:

- Spend more time at home;
- Have a higher respiratory rate;
- Have a greater surface to mass ratio (thus would be expected to absorb more formaldehyde);
- Are closer to the ground (formaldehyde gas is heavier than air and thus at higher concentrations closer to the ground); and
- Have an immature metabolic system that may not enable them to metabolize and clear absorbed formaldehyde as quickly as in adults.

Therefore, when approaching these issues, it is probably best to say that there is NO acceptable level of formaldehyde exposure that is safe for children.

Long Term Exposure

Beyond the immediate symptoms, there are concerns about possible long-term consequences of formaldehyde exposure.

- Formaldehyde sensitization has been associated with changes to the immune system (increased IgE, altered T-cell cytokine secretion) that can increase allergic responsiveness in general;
- Formaldehyde is genotoxic – causing rearrangement of chromosomes and breakage of sister chromatids;
- Formaldehyde is listed as a carcinogen or probable carcinogen by a number of national and international organizations; and

- Formaldehyde has most closely been correlated with increased risk of nasal and nasal-pharyngeal carcinomas but may also be associated with lung cancer or blood disorders.

Homeland Security cites a study of mobile home residents exposed to formaldehyde above 0.10 ppm (100 ppb) for 10 years indicating a statistically significant increase in the risk of throat cancer.

Timeline of Concern and Agency Contact

In the summer and fall of 2006, I followed reports coming from the Mississippi Gulf Coast of families living in FEMA travel trailers who were experiencing more alarming adverse events such as daily profuse nose-bleeds, severe respiratory problems, and pet illnesses. In May 2006, the Sierra Club released a report of elevated levels of formaldehyde in 30 of 32 travel trailers they tested in the Gulf Coast. I felt it would be worthwhile to check the formaldehyde levels in some of the travel trailers in our area.

I discussed my concerns informally with colleagues at the Office of Public Health and elsewhere. The general consensus was that formaldehyde off-gassing should only be a problem in *new* travel trailers. As our families had been occupying these travel trailers for over a year, it was assumed formaldehyde off-gassing should no longer be a problem. Secondly, the travel trailers at Renaissance Village were manufactured before Katrina. It was felt that they should not have the same problems with elevated levels of formaldehyde as those in the Mississippi Gulf Coast which were put together quickly after Katrina.

The Health Consultation of Formaldehyde Sampling at FEMA Temporary Housing Units released by the ATSDR in February of 2007 only added to the confusion regarding what might be considered "safe" levels of formaldehyde in occupied travel trailers. In this report, 0.3 ppm (300 ppb) was chosen as the "level of concern". This level (0.3 ppm) was reportedly selected as it is an effect level associated with acute narrowing of the bronchi in sensitive individuals. However, this level is nearly forty times higher than what is established by ATSDR as "minimal risk level" (0.008 ppm or 8 ppb) for long-term (> 365 days) exposure.

At this time, community members felt that this was an issue for FEMA to investigate and accept accountability for. Every few months, when the formaldehyde issue reappeared in the media, rumors would circulate that FEMA would be testing the travel trailers. On these occasions, I contacted Mr. Manuel Broussard, FEMA Public Relations in Baton Rouge, who would clarify that FEMA was not planning to test occupied travel trailers. Mr. Broussard also put me in touch with Ms. Gail Tate, FEMA Interagency Coordinator, who affirmed that FEMA's plan was to continue working towards relocating trailer residents rather than to offer testing.

After last year's Congressional hearings and FEMA's announcement in July of 2007 that it would work with the CDC to test occupied travel trailers, many trailer residents believed that this testing was imminent and they would be able to request to have their

trailer tested. In fact, FEMA released a press statement in July 2007 that testing would begin on Tuesday, July 24, 2007. In order to better inform concerned patients, I contacted the CDC for clarification and learned that the CDC needed time to design a study and that the testing of the travel trailers would be random: residents would not be able to request to have their trailer tested; it was unclear if individual results were going to be given to those residents whose trailers were tested; and the study start date was unknown.

There was a fear, warranted or not, among both residents and service providers, of possible reprisals from FEMA if people complained about formaldehyde or initiated testing of travel trailers independently. On my request, the Sierra Club provided our project with a few test kits and assisted me with installing and collecting these testers, following up with the families to review test results, and in advising families on measures they might take to reduce their exposure to formaldehyde. This sample of trailers tested approximately ten to twenty-five times above ATSDR's "minimal risk level" for long-term exposure and at least five times above levels often present in conventional homes.[*] Only one of the eight measured less than 0.1 ppm – the other seven tested between 0.1 – 0.3 ppm (100 – 300 ppb).

While maintaining confidentiality on the request of the families involved, the summary of this testing sample was shared with persons with the Office of Public Health, the Children's Health Fund and others. The Children's Health Fund has provided us with additional testers and we have recently been offering this testing to concerned families who have not yet had their trailers tested by the CDC or others.

I was contacted first in late summer/early fall of 2007 by representatives from the CDC. One gentleman called me to give me the contact information for Allison Stock, PhD, MPH, Team Leader, Air Pollution Team, CDC/NCEH. I also spoke on a number of occasions with La Freta Dalton, Senior Health Communication Specialist, CDC/ATSDR, and participated in a phone conference with CDC representatives regarding their upcoming study. In the fall of 2007, Allison Stock and I exchanged a number of emails and attempted to arrange a phone conference regarding CDC's contract with FEMA to test occupied travel trailers but I do not believe we ever actually spoke in person.

ATSDR's October 2007 Update and Revision of the February report on Formaldehyde Sampling of FEMA Temporary-Housing Trailers clarified that "the exposure scenarios examined by the sampling were not intended to represent those that people living in trailers would experience", and concludes that "long-term exposures, even at lower level increase the possibility of cancer or reproductive or developmental toxicity" and removed language defining any set "level of concern". This update also mentions concerns of CDC/NCEH, ATSDR and EPA representatives as early as July 2006 that the study requested by FEMA "could not be generalized and applied to occupied trailers in the Gulf region".

[*] It is not unusual for conventional homes to have indoor formaldehyde concentration levels of 0.01 to 0.02 ppm (10 – 20 ppb).

Conclusions

The Committee asked me to address, "what do (I) believe the federal government, particularly the ATSDR, could have or should have done regarding the formaldehyde issue."

First, I am glad that FEMA acknowledged that recreational vehicles, such as the travel trailers used so extensively post-Katrina, are *not* regulated by HUD and are designed for short-term recreational use and are not intended for housing. FEMA has accordingly announced that it will no longer offer recreational vehicles as a temporary housing option after future disasters. I recommend that in the aftermath of future disasters, FEMA will more actively involve local government, non-profits, and family and child advocates in planning safe and appropriate housing options for displaced families.

Second, I am surprised that the CDC waited so long to initiate formaldehyde testing of occupied travel trailers given the stated concerns of some of their own representatives as early as July 2006 and given the reports by ATSDR in February of 2007 that cited formaldehyde levels greatly above their own defined "minimal risk level" for long-term exposure. At the recent public forum in Baker, Louisiana, on CDC's recently released study, I was shocked by the statement of the representative present that the CDC was not aware there was a potential problem with elevated levels of formaldehyde in the travel trailers until July of 2007.

Third, formaldehyde exposure is just one of the many problems being faced by families displaced by hurricanes Katrina and Rita. People are still struggling with fractured support systems, loss of property, sense of self, income, community and loved ones, stigma, unstable living situations, transportation problems, and difficulty accessing quality health care and child care. It is unacceptable that many families must endure uncertainty and concerns regarding possible short and long-term effects of on-going exposure to elevated levels of formaldehyde in addition to the daily anxieties and stresses of displacement.

Fourth, as FEMA works with local agencies to find more appropriate and safe housing solutions for families, we recommend that coordinated efforts be made to prevent any further disruption and endangerment of families. While priority is being placed on removing families from their potentially toxic living environment, consideration must also be given to families' very real educational, employment, child care, health care and transportation needs. Children and families must not be forced to move from one difficult environment to another.

Finally, I recommend that the CDC consider expanding their proposed child health study to a wider sample of children displaced/affected by Hurricane Katrina and look forward to contributing to such a study in anyway I might be able. Thank you.

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