TESTIMONY OF RUTH A. ETZEL, MD, PhD, FAAP
ON BEHALF OF THE AMERICAN ACADEMY OF PEDIATRICS

COMMERCE, SCIENCE AND TRANSPORTATION
SUBCOMMITTEE ON CONSUMER PROTECTION, PRODUCT SAFETY, AND INSURANCE

April 28, 2009

Formaldehyde in Textiles and Consumer Products

Department of Federal Affairs
The Homer Building
601 Thirteenth Street, N.W.

Good morning. I appreciate this opportunity to testify today before the Commerce, Science and Transportation Subcommittee on Consumer Protection, Product Safety and Insurance regarding formaldehyde in textiles and consumer products. My name is Ruth Etzel, MD, PhD, FAAP, and I am proud to represent the American Academy of Pediatrics (AAP), a non-profit professional organization of more than 60,000 primary care pediatricians, pediatric medical sub-specialists, and pediatric surgical specialists dedicated to the health, safety, and well-being of infants, children, adolescents, and young adults. I am the Founding Editor of the AAP's book on Pediatric Environmental Health, and I am currently editing a 3rd edition. I am also a former Chair of the AAP Committee on Environmental Health and the founding chair of the AAP Section on Epidemiology.

Formaldehyde is a toxic, pungent, water-soluble gas used in the aqueous form as a disinfectant, fixative, or tissue preservative, making it versatile for a wide range of uses. Formaldehyde resins are used in wood products (e.g. particleboard, paper towels), plastics, paints, manmade fibers (e.g. carpets, polyester), cosmetics, and other consumer products,[1] including many with which children have regular contact.[2] According to recent research and media reports, formaldehyde may be found in fabrics and children's clothing[3], children's furniture,[4] baby bath products,[5] and other products. Formaldehyde is also used in the resins used to bond laminated wood products and to bind wood chips in particleboard. Particleboard may be used in various types of furniture, including cribs and other items meant for use by or with children. The experience of Gulf Coast families living in mobile homes and travel trailers after Hurricane Katrina brought these hazards

to the nation's attention; trailers, which have small, enclosed spaces, low air exchange rates, and many particleboard furnishings, may have much higher concentrations of formaldehyde than other types of homes.[6,7]

Formaldehyde gas is known to cause a wide range of health effects. A common air pollutant in the home,[8] formaldehyde is an eye, skin, and respiratory tract irritant. In other words, it can cause burning or tingling sensations in the eyes, nose and throat. Children may be more susceptible than adults to the respiratory effects of formaldehyde. Even at fairly low concentrations, formaldehyde can produce rapid onset of nose and throat irritation, causing cough, chest pain, shortness of breath, and wheezing. At higher levels of exposure, it can cause significant inflammation of the lower respiratory tract, which may result in swelling of the throat, inflammation of the windpipe and bronchi, narrowing of the bronchi, inflammation of the lungs, and accumulation of fluid in the lungs. Pulmonary injury may continue to worsen for 12 hours or more after exposure. Children may be more vulnerable than adults to the effects of chemicals like formaldehyde because of the relatively smaller diameter of their airways. Children may be more vulnerable because they breathe more rapidly than adults for their size, and they may be developmentally incapable of evacuating an area promptly when exposed.[9]

Formaldehyde may exacerbate asthma in some infants and children. Studies since 1990 have found higher rates of asthma, chronic bronchitis, and allergies in children exposed to elevated levels of formaldehyde.[10,11,12,13]

In 2004, the International Agency for Research on Cancer (IARC) announced there was sufficient evidence that formaldehyde causes nasopharyngeal cancer in humans and re-classified it as a Group 1, known human carcinogen (previous classification: Group 2A). IARC also reported there was limited evidence that formaldehyde exposure causes nasal cavity and paranasal cavity cancer and "strong but not sufficient" evidence linking formaldehyde exposure to leukemia.[14] The U.S. National Toxicology Program classifies it as "reasonably anticipated to be a human carcinogen."[15]

Formaldehyde can cause contact dermatitis in susceptible people. Dr. Brookstein will discuss this matter in more detail, so I will only note that children are as susceptible as adults to the dermal effects of formaldehyde exposure.

Due to its toxicity, various nations have taken steps to limit the use of formaldehyde in some applications. Several nations have set standards for the presence of formaldehyde residues in fabric, including Finland, Norway, the Netherlands, and Germany. The European Union limits formaldehyde in children's clothing to 30 parts per million.[16] Other nations, such as Japan, China, Russia, Lithuania, New Zealand, and South Korea have set limits on formaldehyde in textiles and/or wood products. Among these nations, the strongest restrictions are in place in Japan, which requires no detectable residue of formaldehyde in clothing for children birth to 3 years of age.[17]

Recommendations

The American Academy of Pediatrics has made formaldehyde recommendations to Congress and the Administration in the past, and would like to reiterate those and submit others for Congress's consideration.

CPSC should limit formaldehyde residues in children's clothing and other products. Given that at least a dozen other nations already restrict formaldehyde residues in children's clothing, CPSC should collaborate with EPA and other agencies with scientific and medical expertise to determine similar limits to be imposed in the U.S. While more research is needed to refine our understanding of formaldehyde's impact on child health, there is already a considerable body of evidence that may be sufficient to allow CPSC to make a reasonable judgment in this area. The agency should also require labels on children's clothing and products that indicate the presence of formaldehyde residues.

More research is needed on formaldehyde and children's health. In July 2007, the Academy suggested to the House of Representatives Committee on Energy and Commerce that the Federal Emergency Management Agency and federal health agencies undertake a systematic, scientifically rigorous study of this issue to determine children's exposure levels and correlation with reported symptoms, and steps that should be taken to safeguard their health. To our knowledge, no such study has been conceived or implemented. It also remains unclear to what extent children may be exposed to formaldehyde from multiple sources, and what effect this may have on their developing bodies. The Consumer Product Safety Improvement Act of 2008 requires the Consumer

Product Safety Commission (CPSC) Comptroller General to conduct a study within two years of "the use of formaldehyde in the manufacture of textile and apparel articles…to identify any risks to consumers caused by the use of formaldehyde in the manufacturing of such articles…" This report is due in January 2011.

EPA should adopt nationwide California's proposed restrictions on formaldehyde emissions from wood products. In January 2009, the AAP joined numerous other organizations in urging Environmental Protection Agency Administrator Lisa Jackson to adopt nationwide the restrictions on formaldehyde emissions from hardwood plywood, particleboard, and medium density fiberboard set under the California Air Resource Board Airborne Toxics Control Measure.

CPSC should develop educational materials for consumers about formaldehyde and its presence and role in various products, as well as potential health risks. The CPSC could provide an important service by providing up-to-date educational materials about formaldehyde. A search of the agency's website reveals a number of documents about formaldehyde, but many of them are from the 1970s and 1980s. The last version of the most comprehensive document, "An Update on Formaldehyde," appears to be the 1997 revision.[18]

The American Academy of Pediatrics commends you, Mr. Chairman, for holding this hearing today to call attention to the potential hazards of formaldehyde exposure among

children. We look forward to working with Congress to minimize the exposure of children and all Americans to all potentially toxic chemicals. I appreciate this opportunity to testify, and I will be pleased to answer any questions you may have.

---

[1] International Agency for Research on Cancer. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. Volume 88. Formaldehyde. Available online at http://monographs.iarc.fr/ENG/Monographs/vol88/volume88.pdf.

[2] Kelly TJ, Smith DL, Satola J. Emission Rates of Formaldehyde from Materials and Consumer Products Found in California Homes. *Environ Sci Technol*, 1999;33(1): 81-88.

[3] "Poison found in kids' clothes from China." New Zealand Sunday Star-Times, August 19, 2007. Available online at http://www.stuff.co.nz/sunday-star-times/497.

[4] Environment California Research & Policy Center. Toxic Baby Furniture: The Latest Case for Making Products Safe from the Start. May 2008. Available online at http://www.environmentamerica.org/uploads/MF/Uh/MFUhMHLNuROm0SNHVkLkxg/Toxic-Baby-Furniture---The-Latest-Case-for-Making-Products-Safe-from-the-Start.pdf.

[5] Environmental Working Group. No More Toxic Tub: Getting Contaminants Out of Children's Bath and Personal Care Products. March 2009. Available online at http://www.ewg.org/node/27698.

[6] American Academy of Pediatrics Committee on Environmental Health. Air Pollutants, Indoor. In: Etzel, RA, ed. Pediatric Environmental Health, 2d Edition. Elk Grove Village: American Academy of Pediatrics, 2003.

[7] Spengler JD. Sources and concentrations of indoor air pollution. In: Samet JM, Spengler JD, eds. *Indoor Air Pollution: A Health Perspective.* Baltimore, MD: Johns Hopkins University Press; 1991.

[8] American Academy of Pediatrics Committee on Environmental Health. Air Pollutants, Indoor. In: Etzel, RA, ed. Pediatric Environmental Health, 2d Edition. Elk Grove Village: American Academy of Pediatrics, 2003.

[9] Agency for Toxic Substances & Disease Registry. Medical Management Guidelines for Formaldehyde. http://www.atsdr.cdc.gov/MHMI/mmg111.html#bookmark02

[10] American Academy of Pediatrics Committee on Environmental Health. Air Pollutants, Indoor. In: Etzel, RA, ed. Pediatric Environmental Health, 2d Edition. Elk Grove Village: American Academy of Pediatrics, 2003.

[11] Wantke F, Demmer CM, Tappler P, Gotz M, Jarisch R. Exposure to gaseous formaldehyde induces IgE-mediated sensitization to formaldehyde in school-children. *Clin Exp Allergy*. 1996 Mar; 26(3):276-80.

[12] Garrett MH, Hooper MA, Hooper BM, Rayment PR, Abramson MJ. Increased risk of allergy in children due to formaldehyde exposure in homes. *Allergy*. 1999 Apr; 54(4):330-7.

[13] Rumchev KB, Spickett JT, Bulsara MK, Phillips MR, Stick SM. Domestic exposure to formaldehyde significantly increases the risk of asthma in young children. *Eur Respir J*. 2002 Aug; 20(2):403-8.

[14] International Agency for Research on Cancer, "IARC Classifies Formaldehyde As Carcinogenic to Humans," Press Release No. 153, June 15, 2004, http://www.iarc.fr/ENG/Press_Releases/archives/pr153a.html

[15] Krzyzanowski M, Quackenboss JJ, Lebowitz MD. Chronic respiratory effects of indoor formaldehyde exposure. *Environ Res.* 1990 Aug;52(2):117-25.

[16] Information on European Union laws regarding limits on formaldehyde in textiles available online from the Centre for the Promotion of Imports from developing countries, http://www.cbi.eu/.

[17] American Apparel and Footwear Association. Restricted Substances List. February 2009. Available online at http://www.apparelandfootwear.org/UserFiles/File/Restricted%20Substance%20List/AAFARSL_Release4Feb09.pdf.

[18] U.S. Consumer Product Safety Commission. An Update on Formaldehyde, 1997 Revision. Available online at http://www.cpsc.gov/CPSCPUB/PUBS/725.pdf.