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CDC Health Advisory

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**Potential Health Problems Related to Formaldehyde
Among People Living in Mobile Homes or Travel Trailers**

In the aftermath of Hurricane Katrina, the Federal Emergency Management Agency (FEMA) provided either mobile homes or travel trailers to Gulf Coast victims who had lost their homes in the hurricane. Currently, nearly 65,000 households occupy units in Alabama, Louisiana, Mississippi, and Texas. Most (97%) of the units are located in Louisiana and Mississippi. Concerns have surfaced recently about air quality in the trailers and the occurrence of respiratory and other symptoms resulting from exposure to formaldehyde or other respiratory irritants among residents of the mobile homes. CDC is working with FEMA to investigate the health concerns of those living in the trailers and mobile homes.

Persons who live in mobile homes and travel trailers and are concerned about formaldehyde exposure have been directed to seek medical treatment. If these persons present with respiratory symptoms, formaldehyde exposure should be considered as a contributing factor. CDC provides in this document current knowledge about formaldehyde for clinicians that may assist them in addressing patients' symptoms and concerns.

Formaldehyde is a volatile organic compound that is released as a gas from adhesives (urea-formaldehyde resins) that are used to make products such as particle board, plywood, and hardwood paneling. These materials are used extensively in mobile homes and travel trailers, but formaldehyde can be found in almost all buildings and homes. Formaldehyde is also released from urea-formaldehyde foams in wall insulation. Older homes and mobile homes may contain this form of insulation although it is used less frequently today. Formaldehyde is also used in fertilizers and some household items such as carpets, permanent-press fabrics, and household cleaners.

Patients who have been exposed to formaldehyde may present a variety of symptoms. Formaldehyde can irritate the skin, eyes, nose, throat, sinuses, and lungs, resulting in itching, watery eyes, and cough. Some people may develop skin rashes. Others may experience difficulty in breathing with wheezing and bronchoconstriction. At-risk populations with underlying asthma, pulmonary disease, or other comorbidities may be more severely affected. These signs and symptoms may also be caused by other air-borne irritants or allergens including mold, tobacco smoke, pets, mites, cockroaches, and urban smog. People can smell formaldehyde when it is at very low levels, but they can also manifest symptoms even when they cannot smell the chemical.

Diagnosis of formaldehyde reaction is based on clinical grounds including a history of exposure, symptoms consistent with formaldehyde, a temporal association of exposure with symptoms, and the exclusion of alternative explanations for the symptoms. Some people react to formaldehyde at very low levels of exposure. Among sensitive individuals, formaldehyde antibodies (IgG and/or IgE) may form, but no antibody test has been validated for routine diagnostic use. Diagnostic challenge in an exposure chamber is a theoretical approach to confirming the diagnosis, but is not recommended for routine clinical use.

There is no specific antidote or treatment for environmental exposure. Exposure to formaldehyde should be treated symptomatically. Asthma associated with formaldehyde exposure should be treated with the usual approach to asthma with consideration given to avoiding specific exposures

and allergens and using beta agonist bronchodilators and steroids, depending on the judgment of the health care provider and the patient's comorbidities. Symptoms should lessen if the affected individual is removed from the area of exposure. Patients should be encouraged to open windows and use fans to bring fresh air indoors as ways to reduce exposure to formaldehyde.

Clinicians can access additional information about indoor air pollution and formaldehyde at <http://www.epa.gov/iaq/formalde.html>.

For emergent information about acute exposures health care providers should contact their local poison control center. Call 1-800-222-1222 to locate the nearest poison control center. More information about the American Association of Poison Control Centers is available at www.aapcc.org.

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