

*Dedicated to finding causes of childhood cancers, with the goal of preventing future cases*

# FACT

**Families Against Cancer & Toxins**

**PO Box 41285**

**Tucson AZ 85717-1285**

**<http://familiesagainstcancer.org>**

To: Carol Rubin, Center for Disease Control and Prevention  
Martin G. Belson, Center for Disease Control and Prevention  
Robert L. Jones, Center for Disease Control and Prevention  
Beverly S. Kingsley, Center for Disease Control and Prevention  
Robert L. Jones, Center for Disease Control and Prevention  
Timothy Flood, Arizona Department of Health Services  
Bob England, Arizona Department of Health Services  
Diane C. Carper, Cochise County Health Department  
Gary Spivey, Cochise County Health Department

From: Terry Nordbrock, Families Against Cancer & Toxins

Re: **FACT calls for more definitive JP-8 Jet Fuel Exposure Testing in the Sierra Vista leukemia cluster investigation than was done in Fallon**

Date April 20, 2004

It is the position of our group that it is imperative to test for JP-8 jet fuel exposure when the Center for Disease Control and Prevention (CDC) tests Sierra Vista residents for toxic body burden this summer, 2004. It is also necessary that the tests occur on a day when the level of air traffic operations at Libby Army Airfield match its average.

There are several lingering questions about CDC's investigation of the Fallon, Nevada, childhood leukemia cluster investigation -- most notably that they did not perform the definitive tests for JP-8 jet fuel exposure.

JP-8 jet fuel is a concern because both Fallon and Sierra Vista have very active military aviation facilities. The Navy had moved their "Top Gun" training facility to Fallon in 1996, just before the rise in leukemia cases occurred, and the leukemia rates went down after they changed their flight path away from the community. Sierra Vista's Libby Army Airfield sees considerable numbers of "touch and goes," landing and takeoff training for pilots from Davis Monthan flying A-10s and C-130s.

In Fallon, CDC checked blood BTEX levels (benzene, toluene, ethyl benzene, and xylene) in study participants. While these four volatile organic hydrocarbons (VOCs) are present in JP-8 jet fuel, they are also found in gasoline and diesel and are thus very common in the environment. Spot-checking case families' levels of one or two (or four) compounds cannot definitively prove or disprove exposure to jet fuel, particularly when the chemicals used are common in the environment, as is the case with BTEX.

However, there are tests that can conclusively identify JP-8 exposure. Jet fuel 8 contains over 2000 chemical compounds. What is distinctive and definitive about jet fuel chemistry is the RELATIVE amounts of these constituents, and more importantly, the relative amount of 9-carbon to 18 carbon hydrocarbon compounds. So jet fuel scientists use pattern-recognition techniques to study gas chromatograms of air, dust, breath, or whatever, to identify the presence of jet fuel.

This approach allows the relative amounts of myriad chemical compounds to be assessed and matched to JP-8's very distinctive gas chromatogram chemical "signature." Please refer to the Liu and Pleil paper for an explanation of how to perform this test.

Whereas the presence of BTEX chemicals alone could be due to gasoline, diesel, or even industrial solvents, the telltale chromatographic signature of JP-8 cannot be mistaken for anything else. It is very distinctive.

It will not be necessary to quantify exposure levels. Recent studies show that even very low levels of jet fuel exposure, particularly for fetuses, can have serious cancer-risk-increasing effects. So the only question that needs to be tested, is whether or not the case families are being exposed--is jet fuel present in their breath or blood, or not? How much is there is irrelevant, and would depend mightily on when they were most recently exposed before testing, at any rate.

Based on published studies, it appears that EPA has considerably more experience than CDC in testing for environmental exposures to this fuel, as they helped the Air Force conduct their occupational exposure study. FACT strongly recommends that CDC request EPA to perform the JP-8 analysis for Sierra Vista residents.

FACT will be meeting with Dr. Bob England of the Arizona Department of Health Services on May 3, 2004. Please reply before or on that date.

#### **References:**

Egeghy PP, Hauf-Cabalo L, Gibson R, Rappaport SM. Benzene and naphthalene in air and breath as indicators of exposure to jet fuel. *Occup Environ Med.* 2003 Dec;60(12):969-76. PMID: 14634191

Liu S, Pleil JD. Optimized determination of trace jet fuel volatile organic compounds in human blood using in-field liquid-liquid extraction with subsequent laboratory gas chromatographic-mass spectrometric analysis and on-column large-volume injection. *J Chromatogr B Biomed Sci Appl.* 2001 Mar 5;752(1):159-71. PMID: 11254190

Serdar B, Egeghy PP, Waidyanatha S, Gibson R, Rappaport SM. Urinary biomarkers of exposure to jet fuel (JP-8). *Environ Health Perspect.* 2003 Nov;111(14):1760-4. PMID: 14594628