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Refinery Exposure: Benzene and Adverse Health Effects among Children

MedicalResearch.com interview with:
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MedicalResearch.com: What are the main findings of the study?

D'Andrea: Human exposure to benzene is associated with multiple adverse health effects leading to hematological malignancies including leukemia, lymphoma, aplastic anemia, pancytopenia and chromosomal aberrations. In addition, benzene exposure can affect a variety of organs such as the liver, kidney, and brain. Compared to adults, children have a higher susceptibility to environmental chemical exposures including benzene. In this study, we assessed the adverse health effects of the benzene exposure in children (< 17 years) following a flaring incident at the British petroleum refinery in the Texas City, Texas. The findings were compared with those children not exposed to the benzene. We found that white blood cell counts were significantly decreased in benzene exposed children compared with the unexposed children. Conversely, platelet counts were increased significantly in the benzene exposed group compared with the unexposed group. Similarly, benzene exposed children had significantly higher levels of serum creatinine levels than those unexposed to benzene. Furthermore, considered indicators of hepatic

damage, the serum levels of alkaline phosphatase, aspartate amino transferase, and alanine amino transferase were elevated in the benzene exposed children compared with the unexposed children. Moreover, children exposed to benzene experienced somatic symptoms, with headache, unsteady gait, and memory loss being reported the most frequently occurring events, followed by upper respiratory symptoms cough, nausea/vomiting, skin rash, shortness of breath, wheezing, dizziness, chest pain, painful joints, and weight loss.

MedicalResearch.com: Were any of the findings unexpected?

D'Andrea: To our knowledge, no previous study has explored the adverse health effects of the benzene exposure specifically assessing the hematological and hepatic functions in children. For the first time, we reported altered blood profiles and hepatic function in children exposed to benzene.

MedicalResearch.com: What should clinicians and patients take away from your report?

D'Andrea: The results of this study indicate that children exposed to the benzene experienced significantly altered blood profiles, liver enzymes and somatic symptoms. Thus, exposure to benzene has potential risks for developing health problems, specifically, hepatic or hematological abnormalities.

MedicalResearch.com: What recommendations do you have for future research as a result of this study?

D'Andrea: Studies evaluating the changes in hematologic, cardiac, hepatic, renal, and other vital organ functions in benzene exposed populations are emerging. We have yet to learn and understand full extent of the adverse health effects from benzene exposure in children. The lack of available clinical information on the subject was the motivation for future investigations on the effect of benzene exposure on vital organs function such as changes in cardiac, renal, and pulmonary functions not only in children and also in adult subjects.

Citation:

D'Andrea MA, Reddy GK: Health Effects of Benzene Exposure among Children Following a Flaring Incident at the British Petroleum Refinery in Texas City. *Pediatr Hematol Oncol* 2013 Oct 2 [Epub ahead of

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