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Department of Health Lead Screening Finds No Evidence of Widespread Lead Exposure from Maui Fires

Results indicate an absence of clinically significant
human exposure to toxins in wildfire ash

HONOLULU – The Department of Health (DOH) has released findings of lead screening conducted at a series of community events between December 2023 and February 2024, among people impacted by the Maui wildfires. DOH Public Health Nurses and Healthy Mothers Healthy Babies Coalition of Hawaii (HMHB) collaborated on the project. While wildfire ash contains significant concentrations of lead, the screening results do not indicate evidence of widespread human exposure to toxins in the ash.

“While the effects of the August 8 wildfires on the community have been devastating, it’s reassuring to know that people in the community are not showing elevated blood lead levels,” said State Health Director Dr. Kenneth Fink. “On the basis of these results with lead as an indicator of exposure, we do not expect to find health impacts caused by toxins in the wildfire ash.”

Background

Lead is one of the heavy metals of concern found in significant concentrations in ash from the August 2023 Maui fires. High lead exposure is toxic to humans, and routine lead screening is recommended for populations at high risk. Besides wildfire ash, sources of lead exposure can include lead-based paint, consumer products, and certain work environments and hobbies.

The U.S. Centers for Disease Control (CDC) has set a Blood Lead Reference Value (BLRV) of 3.5 micrograms per deciliter (µg/dL) to identify children with blood lead levels (BLL) that are higher than most children's levels. For adults, the CDC's Adult Blood Lead Epidemiology and Surveillance program specifies a BLL of 5 µg/dL or greater as requiring surveillance.

Because lead is eliminated slowly from the body, lead testing is also useful as an indicator for potential exposure to wildfire ash. An elevated BLL may or may not be due to wildfire ash exposure, as there could be other sources of lead in the environment. However, normal or below-normal BLL provides reassurance that significant exposure to ash has not occurred.

For this project, more than 550 people were screened for lead exposure by DOH public health nurses and HMHB staff at 15 community events, including Kula and Lahaina Community Meetings, a DOH lead testing event at Princess Nāhiʻenaʻena Elementary School, University of Hawaiʻi's Maui Wildfire Exposure Study (MauiWES) recruitment events and a first responder event. Screening was based on a blood sample taken from a finger-stick and evaluated using Meridian Bioscience LeadCare II machines. While this method is easier to administer, it is associated with a high incidence of false-positive results, so if the test result indicated a BLL of 3.3 ug/dL or greater, participants were encouraged to obtain a second test using a more accurate, but more intrusive, venous blood sample for confirmation.

Results

A total of 557 West Maui residents were screened for lead. Of those, 27 (4.8%) had lead detections at 3.3 ug/dL or greater using the LeadCare II screening method. Of the 27 people with positive screening tests, 20 received the recommend confirmatory venous tests, 15 of whom were not subsequently found to have an elevated BLL and were determined to have a false positive screening test. The 5 who were found to have confirmed lead detections had levels ranging from 2.1 to 5 ug/dL. Other potential sources of exposure for these 5 are unknown.

Depending on how the positive screening tests without confirmatory venous tests are factored, confirmed lead detection rates across this population ranged from 0.9% to 2.2%, meaning an elevated lead level was not detected in 97.8%-99.1% of those with potential ash exposure who were screened.

The very low prevalence of elevated lead, combined with the low blood levels of lead detected, provides a high level of reassurance that at a population level the Maui wildfires did not result in clinically significant exposure to contaminants in ash. Based on these findings, screening the general population with potential wildfire ash exposure for toxins that were identified in the ash is not recommended.

With regard to lead in particular, the body will slowly eliminate it if ongoing exposure is avoided. For groups that are particularly at risk of harmful effects of lead, such as pregnant women and children, discussing lead screening with a healthcare provider at a routine visit is recommended.

More information on this study can be found at DOH Lead Screening Report - May 2024.

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