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Preliminary Kula ash samples show elevated levels of toxic substances

HONOLULU – The Hawai'i Department of Health (DOH) announced today that preliminary, unvalidated data from ash sampling it received late Friday night shows very high levels of arsenic in wildfire ash collected in Kula. The testing also indicated elevated levels of lead and cobalt.

Parameter	Unit	Lab Report #1	Lab Report #2	Lab Report #3	Mean Lab Reports	Soil Environmental Action Level
Arsenic	mg/kg	3,240	3,260	3,080	3,193	23
Cobalt	mg/kg	86	81	89	85	4.7
Lead	mg/kg	640	769	655	688	200

The ash samples were collected on September 21 from eight burned homes in Kula, which had been constructed from the 1930s to the 2000s. Because homes in the impacted area of Lāhainā were constructed during the same time period, DOH expects that the ash in Lāhainā will have a similar contaminant profile. With EPA phase 1 hazard removal nearing completion, DOH will conduct testing of Lāhainā ash.

DOH and its partners have consistently communicated that the wildfire ash and dust are toxic and should be avoided. Based on the new preliminary data, the primary contaminant of concern is arsenic, a heavy metal that adheres to wildfire dust and ash. This finding reinforces the need to diligently follow recommendations to reduce potential exposure.

“The preliminary data indicate extremely high levels of arsenic in the ash, as well as elevated levels of lead and cobalt,” said State Health Director Dr. Kenneth S. Fink. “While the presence of these substances is not unexpected, the concentration of arsenic in particular demonstrates the high toxicity of the ash and reinforces the importance of avoiding exposure to the ash. It is important to remember that people can take action to minimize their exposure to these contaminants including avoiding disruption of ash and wearing proper PPE when in impacted areas. In addition, for people near the impacted areas, keeping surfaces clean of dust and ash and frequent handwashing will greatly reduce exposure.”

[Click here to view the preliminary, unvalidated ash sampling data.](#)

DOH is taking the following actions in Lāhainā and Kula based on this preliminary data to protect public health:

- In Lāhainā, DOH requested that the County of Maui and U.S. Environmental Protection Agency (EPA) prioritize the application of Soiltac, a dust control agent and soil stabilizer, on impacted zones closest to inhabited areas. As arsenic is a metal that adheres to ash, preventing ash and dust from becoming airborne will greatly decrease the risk of exposure to arsenic and other contaminants. The EPA completed Soiltac application in Kula and areas near Lāhainā schools.
- DOH recommends that the County of Maui install higher dust screens around the impacted areas and use water misters in Lāhainā to protect those residing next to the impact area to further control dust and ash from becoming airborne until Soiltac can be applied.
- DOH strongly recommends that the County of Maui cease the use of sifters in areas next to inhabited areas during Lāhainā re-entry visits, as the sifters cause ash to become airborne.
- DOH will conduct ash characterization testing in Lāhainā in coordination with EPA. DOH plans to collect hundreds of ash samples from impacted areas in Lāhainā to create a representative sample but can only do so after household hazardous materials are cleared from properties.
- DOH will also conduct additional air sampling in Lāhainā and Kula for heavy metals, including arsenic. If ash or dust are not in the air at the time of sampling, it is unlikely that contaminants would be found in any measurable amount that would be considered harmful.
- DOH continues to install additional PM2.5 continuous air monitors. PM 2.5 is particulate matter that is 0.0025 millimeters and smaller in size (about 30 times smaller than a human hair) that can be a component of ash, dust, smoke, and air pollution.

DOH continues to urge Lāhainā and Kula residents to take precautionary measures when in the impacted areas and avoid exposure to wildfire ash or dust.

All Lāhainā and Kula residents can monitor real-time air quality at fire.airnow.gov or by downloading the [AirNow mobile app](#). Additional apps such as [Local Haze](#), [IQAir](#), and [Paku](#) use the same data sources and allow for real-time alerts.

Contaminants of concern, such as metals like lead or arsenic, adhere to the pieces of ash and dust that register as PM 2.5. Because of this, air monitoring for PM 2.5 can be used as an indicator for contaminant monitoring. If PM 2.5 measurements are not above typical baseline levels (remain in the green zone), then ash and dust from the impacted areas, with their associated contaminants, are very unlikely to be in the air in any measurable amount that would

be considered harmful. Air monitoring is indicative of the general air quality, and cleanup activities or other activities that disrupt the ash could cause hazardous dust and ash to become airborne in that highly localized area, creating a hazard.

If real-time air monitors in Lāhainā or Kula are yellow, orange, red, or purple (AQI above 50):

- Avoid outdoor activities to reduce exposure and minimize health risks. This is particularly important for children and pregnant people.
- Stay indoors and close all windows and doors. If an air conditioner is used, set it to the recirculate option.
- If you need to leave the affected area, turn on your vehicle's air conditioner and set it to the recirculate option.

Communities Adjacent to Impacted Areas

Residents in areas near the impacted areas should take precautions such as daily mopping and wet wiping to keep household surfaces free of dust or ash. Children, who are most susceptible to the toxic effects of these chemicals, should not play outside in areas that contain ash.

DOH recommends people stay indoors and close windows when air quality indicator changes to any color other than green. Using one of the air quality mobile apps with alerts can be very helpful. If unable to access a mobile app, it's recommended to stay indoors and close windows if downwind of the impact area during a time of increased risk of disruption of the ash such as in high winds or zone re-opening.

Re-Entry Visits

DOH urges individuals returning to impacted areas for temporary visits to [follow re-entry guidance](#).

- **DOH strongly recommends** that the County of Maui cease the use of sifters in areas next to inhabited areas during Lāhainā re-entry visits, as the sifters cause ash to become airborne.
- **DOH strongly recommends** use of personal protective equipment when in impacted areas.
- Children and pregnant people **absolutely should not** enter impacted areas.
- **Do not eat in impacted areas.** Ensure that the spout or top of your water bottle is covered and protected from dust.
- **Any objects removed** from the impacted area must be immediately washed with soap and water.
- **DOH strongly recommends** people consider the risk of re-entry and thoughtfully decide if the risk of exposure to these contaminants is worth the benefit for them.
- **DOH strongly recommends** people limit their time in the re-entry zone as much as possible.

Schools

DOH continues to work with the Department of Education (DOE) to assess risk at West Maui Schools as well as with Maui County and other partners to assess risk and take steps to minimize those risks.

“The Department of Education continues to strongly believe that reopening our Lāhainā schools for in-person learning is critical for the well-being of our students and the community. We have been reassured that our campuses are safe for students and staff to be at based on current air quality conditions and the extensive environmental testing we’ve done over the last several weeks,” DOE Superintendent Keith Hayashi said.

“We have revised our school safety guidelines to be extra cautious if the air monitors pick up particles in the air and we will continue to work closely with DOH to regularly test and monitor conditions at the schools. While our plans to reopen the Lahaina schools to students starting tomorrow remain unchanged, we understand families will need to take in this new information, process what it means, and make decisions that are best for their situation and their ‘ohana. Our schools will be flexible on student absences during this first week of reopening as families make decisions.”

Soiltac, was applied to impacted areas near Lāhainā schools, which adds an additional layer of protection to keep dust and ash from becoming airborne. DOH also recommended that DOE follow its updated guidance to limit outdoor activities and assess if further action needs to be taken if real-time air monitors indicate AQI over 50.

DOH and EPA installed real-time air monitors at West Maui schools and between the schools and the impacted area. DOE has assigned staff to monitor air quality at Lāhainā schools. In addition, extensive environmental testing at the schools conducted by DOH and DOE has not shown evidence of any transportation of ash or these contaminants from the impacted areas.

Soil testing from all three Lāhainā schools did not show levels of arsenic or lead beyond background levels and wipe samples of school surfaces did not detect lead or arsenic. DOE will continue to do bi-weekly wipe sampling on indoor and outdoor surfaces at the schools to monitor for any transport of these contaminants from the impacted areas.

Identified Contaminants

It is important to note that the data available has not yet been validated and final results may vary. This means the currently available data is preliminary and has not been double checked by the lab or quality tested by an independent third party. The final testing results may be different. That validation process is ongoing and may take several weeks; the validated results will be shared as soon as they are available.

Lead is a heavy metal that is expected to be present in ash due its use in paint on houses built before 1978. Lead is particularly toxic for young children and babies in utero as it hinders the development of the brain. Babies and children exposed to lead have trouble with learning, school performance, attention, and other neurocognitive problems. Lead levels in the ash were high and pose a health risk to children and pregnant women who are exposed to ash and dust from the burned areas.

Arsenic is a heavy metal found in soils in Hawaii due to volcanic soils and its use as an herbicide in the early 1900s. It is also found in building materials made of sugar cane (Canec) and wood treated for termite control (CCA treated wood). [Arsenic can also be found in food such as rice, meats, fish and seaweed](#) and has also been found to be naturally occurring in well water around the world. Long-term, environmental exposure to arsenic can cause skin problems, heart problems and cancers of the skin, bladder and lungs. Levels of arsenic in the ash were very high and pose a potential health risk to people with exposure to the ash.

Cobalt is a naturally occurring element that is essential for certain functions of the body including the generation of red blood cells. People are exposed to small amounts of cobalt in food, industrial air pollution, and many cosmetics. However, when people are exposed to excessive amounts of cobalt, it can cause problems with the blood, lungs and skin. Cobalt may also cause cancer with extreme exposures.

Organochlorine pesticides used historically in Hawaii such as chlordane, DDT, dieldrin, heptachlor and related chemicals were not detected in the ash.

DOH continues to analyze the results to assess any potential risks from other contaminants such as polycyclic aromatic hydrocarbons (PAHs), Dioxins, and others.

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