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Validated EPA air sampling data shows good air quality

DOH continues to urge precautions for people entering impacted areas

HONOLULU – Results from validated air sampling conducted by the U.S. Environmental Protection Agency (EPA) in Lāhainā and Kula in late August are reassuring. The results do not show evidence of poor air quality or any hazardous levels of contaminants in the air at the time the samples were collected.

EPA tested for metals including lead and arsenic, asbestos, particulate matter, and 42 compounds called volatile organic compounds (VOC). No metals or asbestos samples exceeded reference levels, and particulate matter (PM 2.5) was detected at low levels consistent with what is expected for this region of Maui under regular conditions. Three types of VOCs were measured at levels above EPA's Regional Screening Levels (RSLs).

VOCs are a class of chemicals that are released into the air after wildfires and are found in many household products which evaporate easily. The three VOCs measured at elevated levels are benzene, naphthalene, and carbon tetrachloride. They are commonly present in urban areas at the levels that were detected in these samples. Because the VOCs can be caused by human activity and occur naturally, it's difficult to determine if their presence is due to the wildfire.

- **Benzene** is a chemical that is commonly found in the environment as a result of industrial processes. It can also be found in the environment as a result of motor vehicle exhaust and burning coal and oil. Two of eight samples in Lāhainā and two of two samples in Kula were higher than the reference level for benzene; however, the levels detected are below levels expected in suburban and rural air.

- **Naphthalene** is a combustion byproduct found in the emissions of fires and cigarette smoke, as well as vehicle exhaust and industrial sources. Most of the testing sites in Lāhainā and Kula showed levels of naphthalene above the reference value. Given the air sampling locations and the wildfire event, these levels of naphthalene are not expected to persist in the environment and should diminish as the cleanup of the site continues. Although levels found are higher than a baseline amount for cities, they are expected to dissipate quickly so should not result in long-term exposure. Levels are much lower than those known to cause acute health problems.
- **Carbon tetrachloride** is a manufactured chemical that does not occur naturally. It is commonly found in air, water, and soil because of past and present releases. One sample in Lāhainā and one sample in Kula were found to be above the reference level. However, the levels detected in Lāhainā and Kula were below background levels expected in cities.

RSLs can tell public health officials if contamination at a site needs further investigation. RSLs are protective levels and are designed with a margin of safety. Short-term exceedances do not pose an immediate risk to people's health. Levels above the RSLs do not mean exposure will necessarily result in health effects.

The purpose of air sampling is to measure how much of a specific contaminant is present in the air over a period of time. Laboratory analysis for different contaminants is done with different methods and some contaminants take longer to show results than others.

To view the validated U.S. EPA air sampling data, click on the links below:
https://health.hawaii.gov/mauiwildfires/files/2023/10/83150-F0376-DAR-091223.pdf
https://health.hawaii.gov/mauiwildfires/files/2023/10/83150-F0376-DVR-092023_TEM.pdf
https://health.hawaii.gov/mauiwildfires/files/2023/10/83150-F0376-DVR-092023_PCM.pdf
https://health.hawaii.gov/mauiwildfires/files/2023/10/83150-F0376-DVR-091823_Metals.pdf

“These air sampling results are reassuring that the air quality is good, and they help validate the utility of continuous air monitoring for particulate matter,” said State Health Director Dr. Kenneth S. Fink. “It’s important to remember that air monitoring is indicative of the ambient air quality, and cleanup activities could cause hazardous dust and ash to become airborne. When in the impacted area where exposure risk is high, people should wear a well-fitting N95 or higher rated mask and other personal protective equipment. Precautions should also continue to be taken in nearby areas should ash get disturbed from high winds, re-entry associated activities, and debris removal and potentially spread beyond the impacted area.”

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. Short-term exposure to PM 2.5 can cause irritation of the eyes, throat, and lungs. Longer-term exposure to PM 2.5 can lead to the worsening of chronic respiratory diseases like asthma and chronic obstructive pulmonary disease (COPD) as well as heart attacks and other significant health problems.

Contaminants of concern, such as metals like lead or arsenic, stick 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 according to https://fire.airnow.gov/), then ash and dust from

the impacted areas, with their associated contaminants, are not in the air in any measurable amount that would be considered harmful.

Following the wildfires, U.S. EPA and DOH have installed 17 continuous real-time air monitors, 12 PurpleAir PM 2.5 monitors in Lāhainā and Upcountry Maui as well as five Environmental Beta Attenuation Mass (E-BAM) monitors in Lāhainā. The E-BAMs are effective for measuring PM 2.5, having accuracy and precision consistent with U.S. EPA requirements, and results comparable to U.S. EPA reference methods. The PurpleAir monitors are more available providing additional protection and awareness of possible ash and dust in the air. The PurpleAir monitors are extremely useful for widespread air monitoring by increasing geographical monitoring coverage within communities.

Real-time air monitoring data is available on the AirNow Fire and Smoke Map at https://fire.airnow.gov/. Type in “Lāhainā, HI” to view current air monitoring results in Lāhainā.

Additional air monitors will be added as recovery efforts continue.

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