



HAWAII STATE  
DEPARTMENT  
OF HEALTH

In the summer of 2010, the Hazard Evaluation and Emergency Response (HEER) Office Site Discovery team discovered historical documents that suggested surface soils in a small residential neighborhood in Kauai may have elevated levels of arsenic and dioxin resulting from pesticides used at the former Kilauea Sugar Mill. The team was able to superimpose the historic drawings of mill operations over aerial photos and current digital maps to establish that two single family homes and a commercial property were located on top of the old mixing site. DOH staff immediately informed the affected property owners, neighbors and began testing soils.

DOH completed an extensive, 12 month investigation to characterize the vertical and lateral extent of contamination. Soil testing along Aalona Place showed high levels of arsenic and moderate levels of dioxin in a stormwater drainage ditch area behind a commercial warehouse. Two other adjacent residential properties also had elevated levels of these contaminants. Sampling of neighboring properties show that surface and subsurface soils are below action levels, and do not pose a health risk. HDOH is confident that all source areas have been identified.

The full report is available on line under the “What’s New” heading, scrolling down to April 2012.  
<http://hawaii.gov/health/environmental/hazard/index.html>

HEER staff met with affected property owners and neighbors, walking the properties to assess exposed soils and describe simple actions community members could take to limit exposure to surface soils. The impacted ditch area was securely fenced and posted with Keep Out signs. The current risk is low because the soils in the affected residential yards are covered with landscaping or clean soil, and the ditch area is fenced and clearly marked to restrict access. However, to restore full use of the residential properties and to ensure the long term safety and livability of the neighborhood, DOH has determined that cleanup of the site is needed. In April 2012, after close coordination with Kauai County, the State made a formal request to US EPA to conduct a federally funded cleanup action.

### ***Cleanup goals and actions planned***

Planning is currently underway for construction to remove contaminated soils from two residential yards and to construct a permanent stormwater swale that will isolate contaminated soils identified on the commercial property. US EPA will be conducting the clean up and remediation of this project with DOH closely involved.

The goals of the cleanup are to:

- Remove and replace the top two feet of soils in both yards with pre-tested, clean fill to restore full residential use of the affected properties.
- Provide a permanent, protective remedy on the adjacent commercial property to manage contaminated soils in place while protecting and rebuilding the existing storm water drainage system
- Help property owners and the county safely manage residual contamination that may be left under structures and roadways or in deeper soils that are impractical to excavate.

The DOH project manager and primary point of contact in our office is Paul Chong, 808-586-4249  
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## ***US Environmental Protection Agency Removal Action***

On July 30, 2012 the Environmental Protection Agency (EPA) will mobilize to the Kilauea area to begin preparations for the removal action. During the week of July 30 to August 3, EPA will be completing logistics for the excavation and capping activities at the impacted properties.

EPA plans to excavate approximately 500 – 600 cubic yards of soil from the two residential properties. This will involve the use of heavy equipment (mini excavators) in the neighborhood, as well as trucks to transport the excavated material to the Kekaha Landfill. Approximately 5-6 truck loads daily will be offloading at the Kekaha Landfill. After decontamination, these same trucks will be used to transport certified clean fill material to the site as needed.

Water and other techniques will be employed throughout the excavation and loading processes to minimize the migration of dust. The effectiveness of the dust suppression efforts will be measured through the collection of ambient air samples and dust/particulate monitors. EPA will be installing 10+ dust monitors through-out the site, within residential homes and the Natural School Bridges School.

All excavations will be back filled with clean material which has been verified through analytical testing. The drainage channel will also be capped with clean material and then armored with large diameter rock. Professional landscapers will be hired to restore the properties.

The EPA is asking the Kilauea neighborhood for their patience during this phase of the work as there will be some noise and traffic. EPA will use traffic control methods to minimize the impact to commuters and maximize the safe transport of materials in and out of the neighborhood. Various construction noises will be heard throughout the neighborhood during removal activities. Heavy equipment operation will occur between 7:00 AM and 4:00 PM Monday through Saturday, and is expected to last 3 weeks beginning August 6, 2012. EPA will work with impacted residents and businesses to minimize the short-term impositions that our mitigation efforts will have on the surrounding community.

## ***Soil Disposal at Kekaha Landfill***

Pending a final EPA determination, contaminated soils from this project will be disposed of at the DOH permitted Kekaha Landfill. The permit requires that multiple precautions are in place to ensure that workers, residents and the natural environment are protected from exposure to these soils during transportation and disposal. The landfill is lined. The arsenic and dioxin is tightly bound to soils and will not migrate through groundwater. The soils will be capped daily to ensure that they are not mobilized by wind. As an added level of oversight, US EPA Waste Management Division/ Resource Conservation and Recovery Act (RCRA) Enforcement Office recently inspected the facility and have certified it for safe disposal of these soils. In addition, EPA will conduct safety training for all landfill workers, to reinforce safe management practices to limit direct contact with contaminated materials.

## ***Community health concerns about excavation, transport and disposal of arsenic and dioxin contaminated soil***

Protecting the safety of residents, neighbors and nearby schools and businesses during the removal action is a top priority for both DOH and EPA. At this site, the primary pathway for contaminant exposure is through accidental ingestion of contaminated soils from a person's hands that have come in contact with the soil. Residents will not be allowed to enter the excavation area as the work proceeds or be allowed access to the excavated soil. All construction, transport and soil activities will employ dust suppression techniques to minimize dust emissions and limit nuisance dust concerns. Although full dust control is anticipated, small



amounts of fugitive dust that may drift away from the site during excavation will not pose a significant health risk.

### ***How are people exposed to arsenic and dioxin?***

For most people the diet, including foods such as fish, rice and seaweed, is the most significant source of arsenic. However, unintentional ingestion of soil with high levels of arsenic can be an important source of exposure. This is especially a concern for young children. Most preschoolers put their hands, toys, or other objects in their mouths, and these often have small amounts of soil and dust on them that the child swallows. While a typical child might eat 1/8 teaspoon of soil daily, some young children may eat more than that on occasion. Eating unusually large amounts (teaspoons or more) of contaminated soil can greatly increase a child's exposure to arsenic. Once construction is complete, no contaminated soil will be exposed at the surface and no risk will be posed to children or any others who come in contact with the soils in the remediated area.

### **Further Information**

***For questions about this fact sheet or further information about the investigation in Kilauea or about HEER Office guidance related to soil arsenic, contact:***

Hawai'i Department of Health,  
Hazard Evaluation and Emergency Response Office  
919 Ala Moana Boulevard, Room 206  
Honolulu, Hawai'i 96814, Telephone: (808) 586-4249

To access more detailed information regarding soil arsenic, including detailed reports of studies conducted in Hawai'i and elsewhere, please visit the HEER Office website: <http://hawaii.gov/health/environmental/hazard/index.html>

***Additional references located on HEER Office website:***

HDOH, 2011. *Arsenic in Soil - Former Pesticide Mixing Area, Aalona Place, Kilauea, Kauai Questions and Answers on Health Concerns (Fact Sheet)*

HDOH, 2008. *Homeowner's Guide to Soil Testing for Arsenic*

HDOH, 2010. *Arsenic in Canec Ceilings and Wallboard in Hawai'i (Fact Sheet)*

