



HAWAII STATE
DEPARTMENT
OF HEALTH

HEER NEWS

The Hawaii Department of Health (HDOH), Office of Hazard Evaluation and Emergency Response (HEER Office), has prepared this newsletter to provide select updates on recent and current HEER activities and announcements of future activities. With the newsletter, the HEER Office hopes to better inform the environmental community and the public of the roles and services that the agency offers.

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Community Safer after Cleanup of Former Pesticide Mixing Area

Environmental cleanup involves identifying potentially contaminated properties, sampling to identify hazards and the extent of contamination, protecting the community from exposures while involving them in decision making, and cleaning up these properties to restore their full intended use. Over the past two years, United States Environmental Protection Agency (US EPA), the HEER Office, Kauai County, the local community, and affected property owners have worked through this process together to create a safer environment for a neighborhood at Aalona Place, Kilauea, Kauai.

In the summer of 2010, the HEER Office Site Discovery team discovered historical documents that suggested surface soils in a small residential neighborhood on Kauai may have elevated levels of arsenic and dioxin due to past pesticide use at the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. HDOH HEER Office staff immediately informed the affected property owners and adjacent neighbors, and then began sampling potentially contaminated soils.

Using state resources from the Hawaii Environmental Response Revolving Fund, HEER completed an extensive investigation to characterize the vertical and lateral extent of contamination. Soil testing along Aalona Place confirmed high levels of arsenic and moderate levels of dioxin in a stormwater drainage ditch area behind the commercial warehouse and the two residential properties. Analytical results of samples collected at neighboring properties showed that contaminants in surface and subsurface soils were below action levels and do not pose a health risk.

During the investigation, 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

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surface soils. Site surveys of the affected residences determined that there were no direct exposures to contaminated soils due to landscaping and existing clean soil in planting beds. At HEER direction, the impacted ditch area was securely fenced and posted with Keep Out signs. With these best management practices in place, HEER determined that short term risks to residents living on the affected properties and in the neighborhood was low. However, cleanup of the site was needed to restore full use of the residential properties and to ensure the long-term safety and livability of the neighborhood.

In March 2012, after close coordination with Kauai County, the State made a formal request to US EPA to conduct a federally funded Emergency Cleanup Action. The US EPA's federal On Scene Coordinators worked closely with all parties to develop a work plan to remove contaminated soil from the residential properties and cap contaminated soil on the commercial property to prevent future exposure. Prior to soil removal and capping activities, a public meeting was held to inform island residents about the cleanup action and upcoming activities and to address community health concerns about excavation, hauling and disposal of pesticide contaminated soils at Kekaha landfill.

US Environmental Protection Agency Removal Action Completed!

On September 17, 2012 the US EPA Superfund Removal Cleanup was completed. The top two feet of contaminated soil (approximately 814 tons) was removed from two residential yards and replaced with clean fill. Professional landscapers were hired to restore the properties. The affected portions of the drainage canal were covered with a permanent concrete cap and armored with concrete tile that will isolate contaminated soils while continuing to provide needed stormwater drainage for the community. The HEER Office will oversee implementation of Environmental Hazard Management Plans to ensure long-term protectiveness of the remedies at these properties.



Above – Drainage canal cap inspection.

The full investigation report is available on the HDOH HEER Website at: <http://tinyurl.com/KilaueaSI>
A story focusing on the discovery of the site and community engagement with respect to public health issues was recently published in the Hawaii Journal of Medicine and Public Health.
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3392555/>

The State is grateful to the US EPA for their crucial technical and financial support of this project and the County of Kauai for their partnership in this important cleanup effort. "I would like to thank the mayor's team and the residents of Kilauea for their support and patience as we all worked together to make the community safe for children and families now and into the future," said Gary Gill, HDOH Deputy Director.



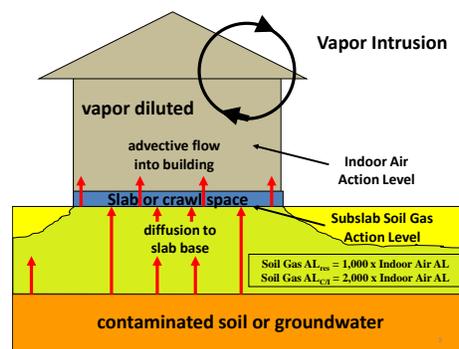
HEER Office Study at the Cutting Edge of Petroleum Vapor Intrusion Research

The HDOH HEER Office used US Environmental Protection Agency State Response Program funds to complete a field-based study of the chemistry and toxicity of petroleum vapors. The study results are being used to develop more efficient, cost effective and accurate approaches for investigating and evaluating vapor intrusion hazards in buildings at petroleum-contaminated sites and ensure the safety of building occupants.

The HEER Office worked with local consultants, the Air Force, and the HDOH Solid and Hazardous Waste Branch to collect soil vapor samples via different sampling methods at several sites impacted by different types of petroleum releases. HDOH performed a detailed analysis of the chemistry of the vapors, including the carbon range makeup of the Total Petroleum Hydrocarbon (TPH) component. The results of the study confirmed the importance of looking at the total chemistry of petroleum vapors in vapor intrusion investigations, including TPH as well as more traditionally targeted volatile chemicals such as benzene, toluene, ethylbenzene, xylene and naphthalene. The full report detailing the results of the

investigation can be downloaded at: <http://tinyurl.com/HEERtph2012>. Hawai'i is one of the first states in the US to publish guidance on this issue. The findings were used to update HEER office TPH soil gas action levels and make additional recommendations to consultants about the best methods to use when sampling soil gas at petroleum-contaminated sites.

Information from the study, lessons learned in the field, document reviews, expert consultant recommendations, and existing data were integrated to enhance Section 7 of the HEER Technical Guidance Manual with updates including detailed active and passive soil gas sample-collection methods and evaluations of passive soil gas samplers. The draft, updated Section 7 *Soil Vapor and Indoor Air Sampling Guidance* will be posted to www.hawaiidoh.org/draft in early October. The HEER Office welcomes environmental professionals to review the document and provide comments by December 31, 2012. Please contact Dr. Roger Brewer at 808-586-4249 if you have questions.



Hawaii Background Metals Study

Funding from the US EPA State Response Program grant enabled the HDOHHEER Office to complete the initial stages of the Hawaiian Islands Soil Metal Background Study to evaluate naturally occurring, background concentrations of metals and related elements in the volcanic soils of Hawai'i. The database used in the study was compiled from literature review of previous research projects, soil data requested from the Natural Resources Conservation Service database, and soil data collected by the HDOH. A total of 180 samples representing surface soil concentrations of 29 chemicals throughout the seven main Hawaiian islands (Kaua'i, O'ahu, Moloka'i, Lana'i, Maui, Kaho'olawe, and Hawai'i Island) were included for the background analysis. Samples with probable anthropogenic sources were excluded from the study; therefore, the study results represent the concentration ranges expected to be associated with background conditions and not site-related contamination. Please visit <http://tinyurl.com/BkgdMtlRpt> to download a copy of the Hawaiian Islands Soil Metal Background Evaluation Report.

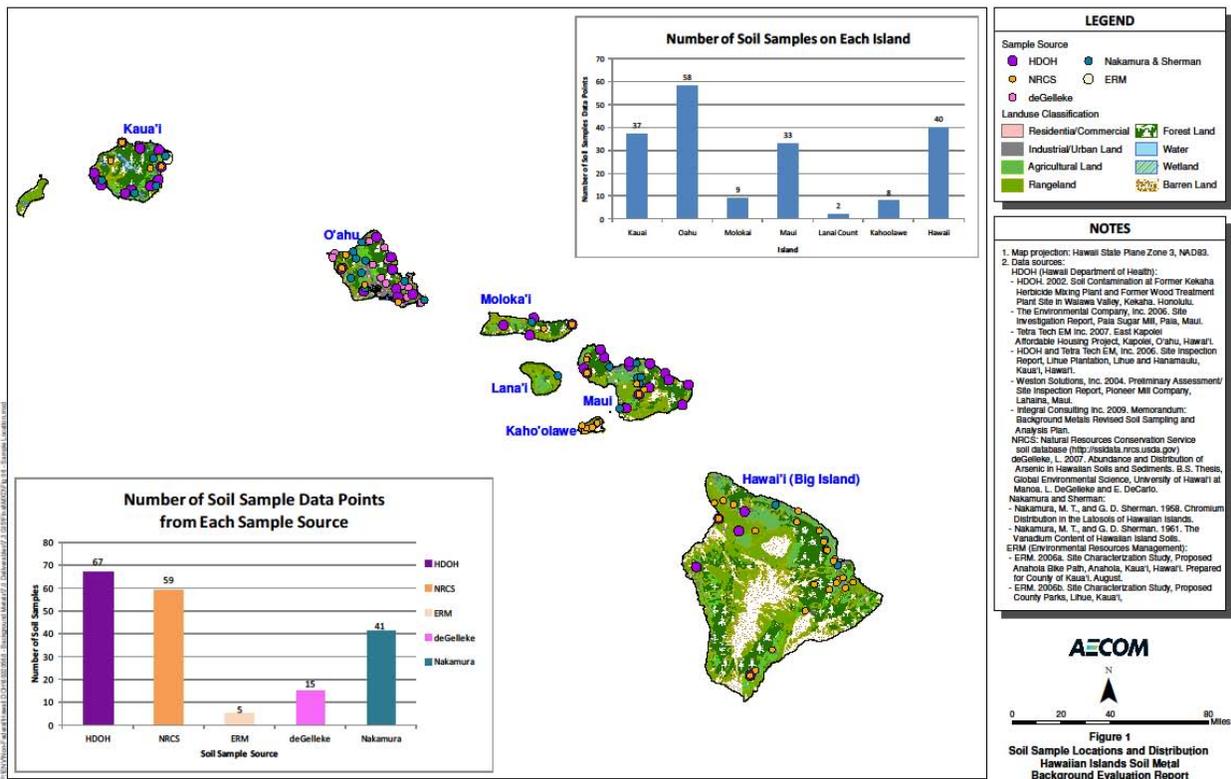


Figure 1: Distribution and data sources of samples used in the study

Estimated background ranges of metals and related elements were primarily generated from the results of cumulative probability plots and spatial and soil type distribution univariate plots (i.e., the combined plots analysis). The plots were assessed to determine if the dataset for the target element may represent more than



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one distinct concentration population. If a single population was identified for the target element, then the data were evaluated to confirm that they most likely represent background conditions. If two or more populations were identified for the target element, detailed spatial analysis, elemental association, geochemical analysis and professional judgment were used to distinguish between concentrations representing background conditions and elevated concentrations that may represent contamination. Estimates made using the combined plots analysis were validated by performing correlation coefficient and geochemical regression studies to analyze the geochemical association of metals that show strong correlation with reference metals (e.g., Al, Fe) in natural soils. Results of the statistical analysis and a comparison to 2011 HDOH Tier 1 Environmental Action Levels are summarized in Table 1

Detailed guidance that will assist the environmental community in evaluating the use of background concentrations when making site decisions is pending. The results of this study were incorporated into the fall 2011 edition of the HDOH Environmental Hazard Evaluation Guidance and associated environmental action levels (EAL). Information on how the data were used and how the upper bound concentrations (UBC), background threshold values (BTV), and concentration ranges may be used when evaluating site-specific data is detailed in the cover letter at <http://hawaii.gov/health/environmental/hazard/docs/covermemo050312.pdf>

This is an ongoing study, so HDOH welcomes environmental professionals to submit background data for metals in soil across Hawai'i for inclusion in the Hawai'i Background Metals Study. Data should be for soil samples from known locations in Hawai'i that are not suspected to be impacted by releases or other anthropogenic activities. Include a description of soil texture, color and composition, as well as geographic coordinates with datum and projection or a map of the approximate location where the sample was collected. Also include a brief summary of the sample collection methodology used (e.g., decision unit size, collection depth, discrete or multi-incremental, etc.). Include all or some portion of the elements summarized in Table 1 comparing background concentration ranges to HDOH EALs. Note the laboratory extraction and analytical methods used. If possible, laboratory extraction methods, analytical methods, and practical quantitation limits (reporting limits) should be comparable to those in the posted HDOH report. Data validated via EPA's PARCCS parameters (precision, accuracy, representativeness, comparability, completeness, and sensitivity) are preferred but this is not a requirement.

For more information or to volunteer data for the study, contact Dr. Roger Brewer or Lynn Bailey in the Honolulu Office at 586-4249 or John Peard in Hilo at 808-933-9921.



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Table 1: Estimated Background Range for 29 Target Elements in Hawai'i Soils

Element (mg/kg)	HDOH EAL ^a	EBA Dataset Range ^b	Background					
			Range (min-max) ^c	BTV ^d	UBC ^e	Mode ^f	95% UCL ^g	95th Percentile
Target Elements with Established EALs								
Antimony	8.2	0.004–31.5U	0.004–2.4	2.4	2.4	0.27	0.7	1.43
Arsenic	23	0.3–283.8	0.3–50	50	24	2.20	11	23.6
Barium	15,000	4.5–926	4.5–926	926	694	120	242	607
Beryllium	160	0.05–3.82	0.05–3.82	3.82	3.0	0.36	1.3	2.83
Cadmium	70	0.02–17	0.02–17	17	2.3	1.10	2.6	4.6
Chromium	N/A ^h	8.52–3,180	8.52–3,180	3,180	1,145	120	365	1,010
Cobalt	23	0.69–113.5	0.69–113.5	113.5	80	28.0	36.4	71.2
Copper	3,100	2.38–450	2.38–450	450	252	43	98.5	204
Lead	200	0.76–380	0.76–72.8	72.8	73	12.0	21.3	54.2
Mercury	23	0.017U–1.4	0.017U–1.4	1.4	0.72	0.12	0.25	0.65
Molybdenum	390	0.06–4	0.06–4.0	4.0	4.0	0.06	0.94	2.20
Nickel	3,800	2.1–767.2	2.1–767	767	410	110	179	340
Selenium	390	0.24–12.2	0.4–12.2	12.2	7.1	1.5	2.4	5.27
Silver	390	0.02–5	0.02–2.9	2.9	1.5	0.06	0.57	1.17
Thallium	0.78	0.25U–15.05J	0.25U–15	15	0.25	N/A	N/A	N/A
Vanadium	390	0.25–1,090	0.25–1,090	1,090	770	110	301	720
Zinc	23,000	3.57–1,200	3.57–1,200	1,200	349	120	127	232
Target Elements with No Established EALs								
Aluminum	N/A	2,500–166,138	2,500–166,138	166,138	166,138	4,400	68,627	122,454
Calcium	N/A	31–77,208	31–77,208	77,208	77,208	6,200	10,611	29,680
Iron	N/A	1,713–260,082	1,713–260,082	260,082	260,082	44,000	108,013	225,097
Manganese	N/A	13–4,880	13–3,522	4,880	4,880	95	1,167	2,434
Strontium	N/A	2U–1,094	2U–1,094	1,094	1,094	22	219.7	435
Tin	N/A	0.6–10	0.6–10	10	10	7.2	5.1	8.8
Titanium	N/A	3,809–53,032	3,809–53,032	53,032	53,032	14,000	22,907	41,385
Tungsten	N/A	0.002–5.43	0.002–5.43	5.43	5.43	0.01	4.96	5.1
Additional Target Elements								
Magnesium	N/A	25U–68,611	25U–68,611	68,611	68,611	1,800	18,201	50,368
Potassium	N/A	170–10,178	170–10,850	10,178	10,178	1,400	2,958	4,338
Sodium	N/A	37–10,850	37–10,850	10,850	10,850	1,200	3,454	6,564
Phosphorus	N/A	63U–18,078	63U–18,078	18,078	18,078	1,500	2,276	7,430

J detect, estimated concentration

N/A not enough detection data to calculate background concentration ranges for thallium

U non-detect concentration, reporting limit value presented.

a HDOH (2011) EAL: Table I-1, Unrestricted Direct Exposure Soil Action Levels (non carcinogens, HQ = 1)

b Minimum and maximum concentrations in the full dataset, including non-detects and outliers.

c Range of background concentration defined as the minimum to background threshold value.

d Background threshold value: the maximum concentration that can be attributed to background conditions, which may or may not include natural outliers.

e Upper bound concentration: upper limit of the range of background concentrations that fit a relatively continuous distribution and do not include any of the natural outliers.

f Mode: 50th percentile (single concentration that occurs most often in the dataset)

g 95th percentile upper confidence limit (UCL) estimated using EPA ProUCL software, v. 4.1.00. Value reported is ProUCL

recommended 95% UCL that is most appropriate for the data distribution. See appendix B, Attachment 1 for the complete ProUCL calculation.

h Direct Exposure Soil Action Level is defined only for chromium III and VI, not total chromium.



Workshops, Forums, and Trainings

Contaminant Awareness Training

The HDOH HEER Office used Environmental Protection Agency grant funds to develop a 1-hour presentation for people who are not environmental professionals, but who may encounter contaminated soil or groundwater during work. The course is designed to teach these workers to identify contaminated sites before they break ground and to recognize signs of potential contamination during excavation activities, as well as provide them with knowledge and resources to prevent the spread of contamination and protect themselves if contamination is present at their sites.

During Federal fiscal year (FY) 2012, the HEER Office contractor contacted labor unions, utility companies and government organizations to schedule training. The target audience of the training was utility workers, construction contractors (including laborers and other field personnel, project managers, health and safety managers, planners), developers, landowners, and private citizens. This year training was given to five different groups at venues around Oahu (HECO, The Gas Company, Honolulu City and County [two sessions], and the General Contractors Association). After each training event, participants completed surveys. Overall, the feedback was very positive and the suggestions were used to update the training given to future groups.

The audience received handouts, passed around props, watched a Power Point presentation, and answered questions to help them develop the skills needed to be safe in the field. After completing the course, the audience members were able to:

- Understand why recognizing, managing, and reporting contamination is important
- Identify potential contamination during planning by:
 - o Learning which types of historical site use may have caused contamination
 - o Learning which HDOH resources to check before beginning work
- Identify potential contamination in the field by recognizing:
 - o Visual and olfactory signs of contamination
 - o Exposure symptoms
- Report releases
 - o Know who to call and when to call
 - o Know what information to give when reporting a release
- Know how to protect themselves and the environment from contamination at the job site
- Know when it is time to seek expert help

The HEER Office and its contractor will continue to provide this training in FY 2013. The audience will be expanded to include interested organizations on Neighbor Islands. If your organization would like to schedule Contaminant Awareness Training, please contact Lynn Bailey of the HEER Office at lynn.bailey@doh.hawaii.gov or (808) 586 4249.



Announcements

EPA FY2012 Brownfields Assessment, Revolving Loan Fund and Cleanup Grant Guidelines

Do you know of property that has not been expanded, redeveloped, or reused because of the presence or potential presence of a hazardous substance, pollutant, or contaminant? Is the property owned by a nonprofit group or state, local or tribal government? If the answer to both of these questions is yes, federal funding may be available to help investigate or remediate the site and make it functional again.

The EPA is accepting applications now for their Assessment, Cleanup, and Revolving Loan Fund Grants. For more information and specific grant guidelines, please visit the EPA website at:

<http://www.epa.gov/brownfields/applicat.htm>

Hurry! The application deadline is November 19, 2012. Winners will be notified in Spring 2013, and funds will be available to use on or before October 1, 2013.

Help Understanding Grants and Finding Funding

Wallace Woo, the US EPA Region 9 Brownfields Coordinator will be in Honolulu on Wednesday, October 24, to answer questions about the grant-writing process. Please contact Melody Calisay or Lynn Bailey at 586-4249 to schedule an appointment with Mr. Woo or for more information about the grants, but don't wait – start writing now!

Additionally, Ignacio Dayrit of the Center for Creative Land Recycling will hold a "Funding and Managing Brownfields Revitalization" workshop at the Manoa East-West Center on Thursday, October 25. The workshop will focus on Brownfields grants, as well as additional funding opportunities. For more information or to register, visit <http://tinyurl.com/CCLRworkshop>

