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TO: Interested Parties

FROM: Steven Chang, Chief
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DATE: June 7, 2005

SUBJECT: Use of May 2005 Environmental Action Levels ("EALs") at Leaking Underground Storage Tank sites

The Hazard Evaluation and Emergency Response (HEER) office has recently published a technical document entitled, *Screening For Environmental Concerns at Sites With Contaminated Soil and Groundwater* (Interim Final - May 2005). Environmental Action Levels (EALs) presented in this document represent an update to action levels presented in the 1995 document, *Risk-Based Corrective Action and Decision Making at Sites With Contaminated Soil and Groundwater*, prepared by the Solid and Hazardous Waste Branch (December 1995, revised June 1996). Formal revision of the 1995 action levels as presented in Hawai'i Administrative Rules (HAR) Section 11-281-78 (UST Site Cleanup Requirements) is currently underway. It is anticipated that this process will be completed in early 2006.

In the interim, the Solid and Hazardous Waste Branch has prepared this Question & Answer sheet to discuss use of the May 2005 EALs at Leaking Underground Storage Tank sites.

Q: How are the May 2005 EALs different from the 1995 Action Levels?

A: The May 2005 EALs reflect more recent toxicological data and take into account additional exposure pathways and environmental concerns. Action levels for petroleum-related chemicals are not significantly different from those presented in the 1995 RBCA document with the exception of ethylbenzene and Total Petroleum Hydrocarbons (TPH). In the case of ethylbenzene, groundwater action levels were updated to reflect more recent data for the protection of aquatic habitats. For sites that do not threaten a source of drinking water, the groundwater action level for ethylbenzene increased from 140 ug/L to 290 ug/L (sites within 150m of a surface water body) and 300 ug/L (sites not within 150m of a surface water body). This change, coupled with use of an alternative model for leaching of chemicals from soil, increased soil action levels for ethylbenzene by up to one order of magnitude.

The 1995 soil action levels for Total Petroleum Hydrocarbons (TPH) were retained for use in the May 2005 EALs. Action levels for nuisance concerns (odors, staining, etc.) were also added, however. This issue was not specifically addressed in the 1995 document. The

additional action levels will be most useful at sites being redeveloped for residential purposes. For example, soil impacted with TPH-gasoline at a concentration of 2,000 mg/kg (1995 action level) could pose potential odor concerns if exposed at the ground surface or encountered during landscaping or utility work. An action level of 100 mg/kg is incorporated into the May 2005 EAL document to address this concern. An additional, nuisance-based action level of 500 mg/kg is presented for both TPH-diesel ("middle distillates") and heavier oils ("residual fuels"). Exceeding these concentrations of TPH in exposed or shallow soils indicates that nuisance concerns may exist and a more site-specific, field-based assessment of this issue should be carried out.

A third update to the 1995 RBCA document that may affect leaking underground tank sites is the inclusion of EALs for additional polynuclear aromatic hydrocarbon compounds (PAHs). A list of targeted PAHs that should be tested for at petroleum releases is provided in Chapter 2 of the May 2005 document. These compounds are often found in waste oil and to a lesser extent in diesel-range fuels. The addition of the compounds to the lookup tables reflects updates to the USEPA Preliminary Remediation Goals (PRGs) as well as other USEPA guidance.

Reference to the additional PAHs is not likely to affect the scope of cleanup required for contaminated soils. Many of the EALs for PAHs in groundwater are very low, however, and may even be below normal laboratory method reporting limits. (In cases where the EAL is below the laboratory method reporting limit, the reporting limit should be used for screening purposes.) This is primarily because these PAHs are highly toxic to aquatic organisms. At a "Tier 1" screening level, the EAL document assumes that contaminated groundwater at a site could migrate to a body of surface water and impact sensitive aquatic habitats. This is especially a concern for highly mobile chemicals (e.g., chlorinated solvents). PAHs are not significantly mobile in groundwater, however, and unlikely to migrate more than a few tens of meters from the original release area. Once it can be established that PAH-contaminated groundwater is not likely to migrate to a body of surface water, consideration of the EALs for PAHs in groundwater cleanup plans is no longer needed (e.g., based on groundwater monitoring data and length versus age and length of plume). Proper management of contaminated groundwater (and soil) during site future redevelopment activities will be required, however.

Q: Am I now required to use May 2005 EALs at Leaking Underground Storage Tank sites?

A: No. Use of the May 2005 EALs is entirely optional on the part of the party responsible for investigating, assessing and cleaning up contaminated sites.

Q: Can I use the May 2005 EALs at Leaking Underground Storage Tank sites if I so desire?

A: Yes. The May 2005 EALs are primarily a compilation of published information that would be normally accessible for use in a "site-specific" environmental risk assessment. HAR Section 11-281-78 (UST Site Cleanup Requirements) allows for the use of approved, "site-specific" action levels at leaking underground storage tank sites provided that all potential environmental concerns are addressed. The updated EALs meet this requirement. Action levels from the 1995 document and the 2005 document should not be mixed, however.

Either one document or the other should be referred to unless otherwise approved by the Solid and Hazardous Waste Branch.

Q: Should I use the May 2005 EALs at Leaking Underground Storage Tank sites, even if this is not required?

A: This depends on the nature and status of the site. A review of cleanup levels at sites that have already been closed or at sites where cleanup levels have already been approved is not necessary.

As indicated above, the May 2005 EALs may be used at sites where investigation and cleanup actions are still underway via a "site-specific" environmental risk assessment. Updated EALs for ethylbenzene may reduce the scope of cleanup needed at many sites, especially where cleanup is being driven by groundwater protection concerns. At sites being redeveloped for residential purposes, additional screening of TPH levels in shallow soils for potential nuisance concerns (odors, staining, etc.) is prudent. This allows the property owner and developer to identify areas where potential cleanup of contaminated soils beyond typical toxicity and leaching concerns may be needed and helps avoid unexpected delays and disposal costs during redevelopment. Although final action levels for petroleum-related releases are not significantly affected, the updated EALs also take into account potential vapor intrusion concerns and subsequent impacts to indoor air.

Q: Can I still use the 1995 Action Levels?

A: Yes. The 1995 action levels (and 1996 updates) can be used until such time that HAR Chapter 11-281 ("Underground Storage Tanks"), including HAR Section 11-281-78 (UST Site Cleanup Requirements), is formally revised (anticipated early 2006). As discussed above, action levels from the two documents should not be mixed except as discussed in the May 2005 document (e.g., soil action levels for high rainfall areas).

The May 2005 EAL document will be revised and updated on a regular basis. Comments and suggestions from the general public are welcome at any time. Updates will be posted to this website and notification sent to persons on the EAL mailing list. Workshops to present and discuss the EALs will also be held periodically. To provide comments or be included on the mailing list for updates and workshop announcements, please contact:

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