# [1]Tier 1 EAL SURFER SUMMARY REPORT
## Hawai'i DOH (Summer 2016, rev Nov 2016)

**Site Name:** test
**Site Address:** test adress
test city HI 12345

**Site ID Number:**
**Date of EAL Search:** 1985-12-19

| Selected Site Scenario | |
|---|---|
| **Land Use:** | Unrestricted |
| **Groundwater Utility:** | Drinking Water Resource |
| **Distance To Nearest Surface Water Body:** | >150m |

**Selected Chemical of Concern:** **BORON**

| Input Site Concentrations | |
|---|---|
| Soil (mg/kg): | 10 |
| Groundwater (ug/L): | 5300 |
| Soil Vapor (ug/m$^3$): | 250000 |

| Soil Environmental Hazards | Units | Tier 1 Action Level | [2]Potential Hazard? | [3]Referenced Table |
|---|---|---|---|---|
| **Direct Exposure:** | mg/kg | 3.1E+03 | No | Table I-1 |
| **Vapor Emissions To Indoor Air:** | mg/kg | - | - | Table C-1b |
| **Terrestrial Ecotoxicity:** | mg/kg | site-specific | No | Table L |
| **Gross Contamination:** | mg/kg | 1.0E+03 | No | Table F-2 |
| **Leaching (threat to groundwater):** | mg/kg | (Use batch test) | - | Table E-1 |
| **Background:** | mg/kg | ? | | |
| **Final Soil Tier 1 EAL:** | **mg/kg** | **1.0E+03** | | |
| **Basis:** | **Gross Contamination** | | | |

| Groundwater Environmental Hazards | Units | Tier 1 Action Level | [2]Potential Hazard? | [3]Referenced Table |
|---|---|---|---|---|
| **Drinking Water (Toxicity):** | ug/L | 4.0E+03 | Yes | Table D-1b |
| **Vapor Emissions To Indoor Air:** | ug/L | - | - | Table C-1a |
| **Aquatic Ecotoxicity:** | ug/L | 3.4E+04 | No | Table D-4a |
| **Gross Contamination:** | ug/L | 5.0E+04 | No | Table G-1 |
| **Final Groundwater Tier 1 EAL:** | **ug/L** | **4.0E+03** | | |
| **Basis:** | **Drinking Water Toxicity** | | | |

| Other Tier 1 EALs: | Units | EAL | [2]Potential Hazard? | [3]Referenced Table |
|---|---|---|---|---|
| **Shallow Soil Vapor:** | ug/m$^3$ | - | - | Table C-2 |
| **Indoor Air:** | ug/m$^3$ | - | - | Table C-3 |

**Notes:**

1. Include Surfer Summary Report in appendices of *Environmental Hazard Evaluation* (EHE) for contaminants that exceed Tier 1 EALs (refer to Chapter 3 of main text).
2. Environmental hazard could exist of concentration of contaminant exceeds action level.
3. Referenced tables presented in Appendix 1 of EHE guidance document.

**Reference:** HDOH 2016, Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater (Summer 2016): Hawai'i Department of Health, Hazard Evaluation and Emergency Response, http://hawaii.gov/health/environmental/hazard/index.html

# Tier 1 Environmental Action Levels Surfer
# Hawai'i DOH (Summer 2016, rev Nov 2016)
## Summary of Toxicity and Fate & Transport Information

**BORON**

| Human Toxicity Factors | Value | Units | Appendix 1 Reference Table |
|---|---|---|---|
| Cancer Slope Factor - oral | | $(mg/kg\text{-}day)^{-1}$ | Table H |
| Cancer Inhalation Unit Risk Factor | | $(ug/m^3)^{-1}$ | Table H |
| Reference Dose - oral | 2.0E-01 | mg/kg-day | Table H |
| Reference Dose - inhalation | 2.0E-02 | $(mg/m^3)$ | Table H |
| Gastro-Intestinal Absorption Factor | 1 | unitless | Table H |
| Skin Absorption Factor | | unitless | Table H |
| Target Excess Cancer Risk Used: | #NAME? | unitless | Table I-1 |
| Target Hazard Quotient Used: | 0.2 | unitless | Table I-1 |

| Aquatic Habitat Protection Goals | Value | Units | Appendix 1 Reference Table |
|---|---|---|---|
| Freshwater Chronic Goal | 7200 | ug/L | Table D-4a |
| Marine Chronic Goal | 1000 | ug/L | Table D-4a |
| Estuary Chronic Goal | 1000 | ug/L | Table D-4a |
| Freshwater Acute Goal | 34000 | ug/L | Table D-4a |
| Marine Acute Goal | 34000 | ug/L | Table D-4a |
| Estuary Acute Goal | 34000 | ug/L | Table D-4a |
| *Bioaccumulation Goal | - | ug/L | Table D-4f |

*Bioaccumulation goals used to screen surface water only (refer to Volume 1, Chapter 2 of EAL text).

| Fate & Transport Information | Value | Units | Appendix 1 Reference Table |
|---|---|---|---|
| Molecular Weight | 14 | | Table H |
| Physical State | nonvolatile solid | | Table H |
| Organic Carbon Partition Coeff. (koc) | #NAME? | $cm^3/g$ | Table H |
| Diffusivity in air | #NAME? | $cm^2/s$ | Table H |
| Diffusivity in water | #NAME? | $cm^2/s$ | Table H |
| Solubility (water) | #NAME? | mg/L | Table H |
| Henry's Law Constant | #NAME? | $atm\text{-}m^3/mol$ | Table H |
| Henry's Law Constant | #NAME? | unitless | Table H |

| *Potential Health Effects | Target Organs & Health Effect |
|---|---|
| Carcinogen | #NAME? |
| Mutagen | #NAME? |
| Alimentary Tract | #NAME? |
| Cardiovascular | #NAME? |
| Developmental | #NAME? |
| Endocrine | #NAME? |
| Eye | #NAME? |
| Hematologic | #NAME? |
| Immune | #NAME? |
| Kidney | #NAME? |
| Nervous | #NAME? |
| Reproductive | X |
| Respiratory | X |
| Skin | #NAME? |
| Other | #NAME? |

*Not intended to serve as a comprehensive source of toxicological information. Ultimate potential health effects dependent on exposure dose, duration of exposure and numerous other factors. Refer to Appendix 1, Table J for specific references.

**Reference:** HDOH 2016, Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater (Summer 2016): Hawai'i Department of Health, Hazard Evaluation and Emergency Response, http://hawaii.gov/health/environmental/hazard/index.html

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**Site Name:** test
**Site Address:** test adress
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**Site ID Number:**
**Date of EAL Search:** 1985-12-19

| Selected Site Scenario | |
|---|---|
| **Land Use:** | Unrestricted |
| **Groundwater Utility:** | Drinking Water Resource |
| **Distance To Nearest Surface Water Body:** | >150m |

**Selected Chemical of Concern:** **ANTIMONY**

| Input Site Concentrations | |
|---|---|
| Soil (mg/kg): | 10 |
| Groundwater (ug/L): | 5300 |
| Soil Vapor (ug/m$^3$): | 250000 |

| Soil Environmental Hazards | Units | Tier 1 Action Level | [2]Potential Hazard? | [3]Referenced Table |
|---|---|---|---|---|
| **Direct Exposure:** | mg/kg | 6.3E+00 | Yes | Table I-1 |
| **Vapor Emissions To Indoor Air:** | mg/kg | - | - | Table C-1b |
| **Terrestrial Ecotoxicity:** | mg/kg | site-specific | No | Table L |
| **Gross Contamination:** | mg/kg | 1.0E+03 | No | Table F-2 |
| **Leaching (threat to groundwater):** | mg/kg | (Use batch test) | - | Table E-1 |
| **Background:** | mg/kg | 2.4E+00 | | |
| **Final Soil Tier 1 EAL:** | **mg/kg** | **6.3E+00** | | |
| **Basis:** | **Direct Exposure** | | | |

| Groundwater Environmental Hazards | Units | Tier 1 Action Level | [2]Potential Hazard? | [3]Referenced Table |
|---|---|---|---|---|
| **Drinking Water (Toxicity):** | ug/L | 6.0E+00 | Yes | Table D-1b |
| **Vapor Emissions To Indoor Air:** | ug/L | - | - | Table C-1a |
| **Aquatic Ecotoxicity:** | ug/L | 1.8E+02 | Yes | Table D-4a |
| **Gross Contamination:** | ug/L | 5.0E+04 | No | Table G-1 |
| **Final Groundwater Tier 1 EAL:** | **ug/L** | **6.0E+00** | | |
| **Basis:** | **Drinking Water Toxicity** | | | |

| Other Tier 1 EALs: | Units | EAL | [2]Potential Hazard? | [3]Referenced Table |
|---|---|---|---|---|
| **Shallow Soil Vapor:** | ug/m$^3$ | - | - | Table C-2 |
| **Indoor Air:** | ug/m$^3$ | - | - | Table C-3 |

**Notes:**

1. Include Surfer Summary Report in appendices of *Environmental Hazard Evaluation* (EHE) for contaminants that exceed Tier 1 EALs (refer to Chapter 3 of main text).
2. Environmental hazard could exist of concentration of contaminant exceeds action level.
3. Referenced tables presented in Appendix 1 of EHE guidance document.

**Reference:** HDOH 2016, Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater (Summer 2016): Hawai'i Department of Health, Hazard Evaluation and Emergency Response, http://hawaii.gov/health/environmental/hazard/index.html

# Tier 1 Environmental Action Levels Surfer
# Hawai'i DOH (Summer 2016, rev Nov 2016)

## Summary of Toxicity and Fate & Transport Information

### ANTIMONY

| Human Toxicity Factors | Value | Units | Appendix 1 Reference Table |
|---|---|---|---|
| Cancer Slope Factor - oral | | $(mg/kg\text{-}day)^{-1}$ | Table H |
| Cancer Inhalation Unit Risk Factor | | $(ug/m^3)^{-1}$ | Table H |
| Reference Dose - oral | 4.0E-04 | mg/kg-day | Table H |
| Reference Dose - inhalation | #NAME? | $(mg/m^3)$ | Table H |
| Gastro-Intestinal Absorption Factor | 0.15 | unitless | Table H |
| Skin Absorption Factor | | unitless | Table H |
| Target Excess Cancer Risk Used: | #NAME? | unitless | Table I-1 |
| Target Hazard Quotient Used: | 0.2 | unitless | Table I-1 |

| Aquatic Habitat Protection Goals | Value | Units | Appendix 1 Reference Table |
|---|---|---|---|
| Freshwater Chronic Goal | 130 | ug/L | Table D-4a |
| Marine Chronic Goal | 30 | ug/L | Table D-4a |
| Estuary Chronic Goal | 30 | ug/L | Table D-4a |
| Freshwater Acute Goal | 3000 | ug/L | Table D-4a |
| Marine Acute Goal | 180 | ug/L | Table D-4a |
| Estuary Acute Goal | 180 | ug/L | Table D-4a |
| *Bioaccumulation Goal | 15000 | ug/L | Table D-4f |

*Bioaccumulation goals used to screen surface water only (refer to Volume 1, Chapter 2 of EAL text).

| Fate & Transport Information | Value | Units | Appendix 1 Reference Table |
|---|---|---|---|
| Molecular Weight | 122 | | Table H |
| Physical State | nonvolatile solid | | Table H |
| Organic Carbon Partition Coeff. (koc) | #NAME? | $cm^3/g$ | Table H |
| Diffusivity in air | #NAME? | $cm^2/s$ | Table H |
| Diffusivity in water | #NAME? | $cm^2/s$ | Table H |
| Solubility (water) | #NAME? | mg/L | Table H |
| Henry's Law Constant | #NAME? | $atm\text{-}m^3/mol$ | Table H |
| Henry's Law Constant | #NAME? | unitless | Table H |

| *Potential Health Effects | Target Organs & Health Effect |
|---|---|
| Carcinogen | #NAME? |
| Mutagen | #NAME? |
| Alimentary Tract | #NAME? |
| Cardiovascular | X |
| Developmental | #NAME? |
| Endocrine | #NAME? |
| Eye | X |
| Hematologic | X |
| Immune | #NAME? |
| Kidney | #NAME? |
| Nervous | #NAME? |
| Reproductive | X |
| Respiratory | X |
| Skin | #NAME? |
| Other | #NAME? |

*Not intended to serve as a comprehensive source of toxicological information. Ultimate potential health effects dependent on exposure dose, duration of exposure and numerous other factors. Refer to Appendix 1, Table J for specific references.

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