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DOH's Guidance on the Approach to Amending the Public Health Advisory, Addendum 1

Public Health Advisory initiated November 29, 2021

Joint Base Pearl Harbor-Hickam Public Water System No. 360

HEER Incident Case No.: 20211128-1848

Purpose: This guidance provides the criteria that the Hawaii Department of Health (DOH) will be using to **amend** the Public Health Advisory (Advisory) issued on November 29, 2021.

DOH's priority is to protect the public health of the people of Hawaii. The guidance is based on "lines of evidence" (Table 1) that must be met before DOH will amend the health advisory and issue notices that the water can be used for drinking. The Navy must also commit to following the long-term monitoring (LTM) of system water quality for this incident under the IDWST Drinking Water Sampling Plan, as amended.

Background: A chemical release of petroleum, which is a hazardous substance, entered the Joint Base Pearl Harbor-Hickam (JBPHH) drinking water distribution system and the Red Hill Shaft. This release triggered an emergency response and DOH issuance of an Advisory on November 29, 2021. State and Federal Drinking Water (DW) Maximum Contaminant Levels (MCLs) under the Safe Drinking Water Act do not adequately address petroleum contamination of drinking water. DOH has established Environmental Action Levels (EALs) and Incident Specific Parameters (ISPs) to more comprehensively monitor and respond to petroleum contaminated drinking water. Any contaminants that exceed the State and Federal DW MCLs, EALs, or ISPs require additional action prior to amending the Advisory. Lines of evidence will be achieved by evaluating the data generated during the investigation conducted by the Interagency Drinking Water System Team (IDWST). The data will be assessed for each Flushing Zone of the Drinking Water Distribution System Recovery Plan. All lines of evidence will require documentation.

DOH Project Screening Levels: State and Federal Drinking Water MCLs, specified State EALs, and ISPs are considered in development of Project Screening Levels. The actions for the thresholds for each contaminant are listed in Tables 2 and 3.

Table 1: Lines of Evidence Under Evaluation

1. Ensure no contamination is entering the water system.		
Objective	Lines of Evidence	Incident Specific Criteria
1a	All reported sources of contamination are isolated and contained.	Contamination from Red Hill Shaft is isolated from Navy’s water distribution system.
1b	The regulated public water system’s water quality data is compliant.	Data meets Federal DW MCLs, specified State EALs, and ISPs.
1c	No additional contamination through the distribution system is occurring.	Cross Connection Control investigation shows distribution system is protected, resulting in no additional sources of contamination.

2. Ensure no contamination remains in the system and water chemistry concerns are addressed.		
Objective	Lines of Evidence	Incident Specific Criteria
2a	Water within the distribution system meets State and Federal DW MCLs, specified State EALs, and ISPs.	<ul style="list-style-type: none"> • Zone flushing plan demonstrates entire distribution system is flushed. • Certification of Water Storage Tank(s) Flushing. • Sample results show the water in distribution system meets State and Federal DW MCLs, specified State EALs, and ISPs. • Drinking water does not show sheen, olfactory evidence, or other qualitative methods of petroleum.
2b	Water in premise plumbing of homes/buildings meets State and Federal DW MCLs, specified State EALs, and ISPs.	<ul style="list-style-type: none"> • Flushing Plan includes procedures to ensure no service connections will re-contaminate the distribution system. • Certification of Completed Irrigation Line Flushing. • Sample Plan includes 72-hour stagnation to account for leaching of contaminants from premise plumbing. • Sample results show water in homes/buildings meets State and Federal DW MCLs, specified State EALs, and ISPs.

Table 2: Threshold Determinations that Drinking Water is NOT Fit For Human Consumption

If the DOH MCLs or DOH Project Screening Levels are exceeded, the Drinking Water Health Advisory shall NOT be amended and the drinking water is considered NOT fit for human consumption.

Table 2 Contaminant	DOH MCL (ug/L)	DOH Project Screening Level (ug/L)	Basis	Notes
Benzene	5	5	DOH MCL ¹	
Toluene	1,000	1,000		
Ethylbenzene	700	700		
Xylenes (total)	10,000	10,000		
JP-5 as Combined Total Petroleum Hydrocarbons (TPH)-Gasoline, Diesel, and Oil Ranges [Incident Specific Parameter]	Not Applicable	211	Release of fresh fuel and potential direct release.	The 211 ug/L screening level is based on risk-based action levels for TPH associated with JP-5 jet fuel described in a HODOH Technical Memorandum dated January 27, 2022, revised February 12, 2022 (HODOH 2022). The action (screening) level conservatively assumes that TPH detected in the water is associated with non-degraded, dissolved-phase, fuel in the drinking water system. The memorandum serves as an addendum to the <i>HODOH 2017 EAL Guidance</i> ² .
1,1,1-Trichloroethane	200	200	DOH MCL ¹	
1,1,2-Trichloroethane	5	5		
1,1-Dichloroethylene	7	7		
1,2,4-Trichlorobenzene	70	70		
1,2-Dichlorobenzene	600	600		
1,2-Dichloroethane (EDC)	5	5		
1,2-Dichloropropane (DCP)	5	5		
1,4-Dichlorobenzene	75	75		
Carbon tetrachloride (CTC)	5	5		
Chlorobenzene	100	100		
cis-1,2-Dichloroethylene	70	70		
Dichloromethane	5	5		
Styrene	100	100		
Tetrachloroethylene	5	5		
trans-1,2-Dichloroethylene	100	100		
Trichloroethylene (TCE)	5	5		
Vinyl Chloride	2	2		
Benzo[a]pyrene	0.2	0.2		
Di(2-ethylhexyl)phthalate	6	6		
Antimony	6	6		
Arsenic	10	10		

Table 2 Contaminant	DOH MCL (ug/L)	DOH Project Screening Level (ug/L)	Basis	Notes
Barium	2000	2000	DOH MCL ¹	
Beryllium	4	4		
Cadmium	5	5		
Chromium	100	100		
Copper ³	1300	1300	DOH AL ¹	
Lead ³	15	15		
Mercury	2	2	DOH MCL ¹	
Selenium	50	50		
Thallium	2	2		
Dichloroethylene, 1,2- (Mixed Isomers)	70	70		
Total trihalomethanes (TTHM) (sum of chloroform, bromoform, bromodichloromethane, and dibromochloromethane).	80	80		
Total Haloacetic acids (five) (HAA5) (sum of mono-, di-, trichloroacetic acids and mono- and dibromoacetic acids).	60	60		
Bromate	10	10		
Chlorite	1000	1000		
Notes:				
¹ CONTAMINANTS REGULATED BY THE SAFE DRINKING WATER BRANCH (updated 7/10/14) at https://health.hawaii.gov/sdwb/files/2014/07/MCL-Fct-2014-07-10.pdf				
² HDOH, 2017, Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater – Hawaii Edition (Fall 2017): Hawai'i Department of Health, Office of Hazard Evaluation and Emergency Response. https://health.hawaii.gov/heer/guidance/ehe-and-eals/ . HDOH, 2022, Recommended Risk-Based Drinking Water Action Levels for Total Petroleum Hydrocarbons (TPH) Associated with Releases of JP-5 Jet Fuel: Hawaii Department of Health, Hazard Evaluation and Emergency Response Office, January 27, 2022, revised February 12, 2022.				
³ Action Levels.				

Table 3: Threshold Concentrations to Trigger Investigation(s)

If the DOH Project Screening Level is exceeded, the Navy shall investigate the source(s) of the contamination under direction of the DOH.

Table 3 Contaminant	DOH MCL (ug/L)	DOH Project Screening Level (ug/L)	Basis	Notes
1-methylnaphthalene	None	10	HIDOH EALs Table D-1a ¹	HIDOH 2017 ² (lowest of drinking water toxicity and taste and odor action levels). If the Project Screening Level for the listed contaminants are exceeded, the Navy shall: <ol style="list-style-type: none"> 1. Notify the DOH within 24 hours of receipt of the preliminary analytical results; 2. Start the investigation of the source of the contamination pursuant to the DOH <i>Technical Guidance Manual</i>³; 3. Submit a draft Corrective Action Plan to the DOH for approval within 72 hours of receipt of the preliminary analytical results; and 4. Comply with interim actions as identified by DOH.
2-methylnaphthalene	None	10		
Naphthalene	None	17		
Total Organic Carbon (TOC) [Incident Specific Parameter]	None	2000	Additional surrogate for TPH	TOC used as an additional surrogate for TPH to increase confidence in representativeness of sample data. <ul style="list-style-type: none"> • While most Oahu ground water sources are closer to 1000 ug/l or below, the proposed EAL acknowledges that distribution system conditions and operational changes may cause a temporary increase in baseline TOC fluctuations. • The proposed EAL can be supported by all current EPA approved drinking water methods utilized for compliance with 40 CFR 141.132(d)(3) as revised: https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100WD1L.txt Results with Detection Limits up to 1500 ug/L may be used to meet the criteria for amending the health advisory.
Fuel-like Odor in the Water or Obvious Petroleum Sheen, or Dermal Irritation due to water [Incident Specific Parameter]	N/A	Present	Public Health Advisory	Within 12 hours of field observations by Navy or DOH or EPA or within 24 hours of receipt of a complaint by the Navy or DOH, the Navy shall follow the <i>JBPHH Water Response Resident Resources</i> or the Water Rapid Response Team process and notify DOH of the status of the response. This continues to be a trigger under the Long Term Monitoring Plan.

¹ HIDOH EALs Table D-1a. Groundwater Action Levels. <https://health.hawaii.gov/heer/files/2019/11/HDOH-EAL-Surfer-Fall-2017.xlsx>

² HIDOH, 2017, Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater – Hawaii Edition (Fall 2017): Hawai’i Department of Health, Office of Hazard Evaluation and Emergency Response. <https://health.hawaii.gov/heer/guidance/ehe-and-eals/>

³ HIDOH, 2017, DOH *Technical Guidance Manual*, <https://health.hawaii.gov/heer/tgm/>.