

## **SECTION 7 POTENTIAL RISK CHARACTERIZATION FOR THE SRA**

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Designations of COPCs as potential risk-associated agents that remain as COPCs to be carried forward to a subsequent BERA are assessed with three lines of evidence for Steps 1 and 2 of the SRA.

- Sediment Quality Benchmarks – Comparison of maximum COPC concentrations in sediments throughout the harbor to available SQBs (i.e., NOAA ER-Ls).
- Sediment Toxicity – Identification of statistically significant relationships involving increasing COPC concentrations with decreasing amphipod survival (whole sediment) or echinoderm fertilization (sediment pore water) for sediments throughout the harbor.
- Bioaccumulation – Identification of bioaccumulation HQs (individual COPCs) or HIs (COPC groupings, i.e., tPCBs) greater than 1 for any aquatic receptor (composite benthic macroinfauna, epibenthic crabs, tilapia, or bandtail goatfish) or bird receptor (waterbirds represented by the Hawaiian stilt, Hawaiian coot, Hawaiian duck, Hawaiian moorhen, and black-crowned night heron; shorebirds represented by the wandering tattler; and piscivorous seabirds represented by the sooty tern).

SRA results for each of the lines of evidence are summarized in Sections 7.1, 7.2, and 7.3, respectively. The combination of information for the lines of evidence is considered in Section 7.4 where final designation is made as to whether a COPC is identified with acceptably low risk for all lines of evidence (i.e., it can be removed from further consideration) or is recommended to be carried forward to a subsequent BERA because of a determination of either unacceptable screening level risk or incomplete information to make a risk determination for one or more lines of evidence.

## **7.1 COMPARISONS OF SEDIMENT CONCENTRATIONS FOR COPCS TO SEDIMENT QUALITY BENCHMARKS (I.E., ER-LS)**

Results of ER-L comparisons are summarized in Table 7.1-1. COPCs with maximum ER-L ratios exceeding 1 continue to be designated as COPCs. COPCs with ER-L ratios less than 1 are designated by “ltb” or less than benchmark. The acronym nb indicates no SQB is available and the COPC will be carried forward to the BERA.

## **7.2 COPC-TOXICITY RELATIONSHIPS IN HARBORWIDE SEDIMENTS**

COPC-toxicity results for Spearman Rank Sum Correlations for amphipod survival and echinoderm fertilization for the harborwide sediment data set are summarized in Tables 7.2-1 and 7.2-2, respectively. COPCs are designated as:

- COPC – the COPC exceeded a criteria and continues to be a COPC to be carried forward to the BERA.
- nsc – no statistically significant correlation (nsc) was determined for increasing COPC concentration in sediment with either decreasing amphipod survival or decreasing echinoderm fertilization. These COPCs are removed from further consideration for sediment toxicity measures because they exhibit no association with toxicity.
- nca – no correlation was attempted (nca) for COPC concentrations and amphipod survival or echinoderm fertilization for sediments. These COPCs will be carried forward to the BERA because information is not available to allow a designation.

Designations are highlighted in gray.

### **7.3 BIOACCUMULATION HQS AND HIs FOR ALL TARGET RECEPTOR SCENARIOS**

Values for HQs for individual COPCs and HIs for appropriate groups of COPCs are used to identify three categories of screening level biochemical risk for the SRA: (1) COPCs that retain the COPC designation and are carried forward to a BERA, (2) COPCs that have acceptably low risk (alr) and can be removed from further consideration based on bioaccumulation considerations, and (3) COPCs for which a continuing COPC or (alr) designation cannot be assigned (i.e., (unc)) because of insufficient or missing information at the SRA level. A COPC is designated for further consideration in a BERA if it has a maximum HQ for any exposure scenario (i.e., any scenario for any aquatic or bird receptor) of 1 or greater based on the lowest NOAEL or NOAEL-equivalent TRVs applied in the SRA. A COPC or COPC grouping is designated as (alr) if the HQs or HIs for all exposure scenarios (i.e., all scenarios for all aquatic and bird receptors) are less than 1. Situations where designation as either a continuing COPC or (alr) cannot be assigned include the following: (1) no TRV is available, (2) a COPC is not appropriate for measurement in a matrix, and/or (3) sample data is not available.

Results of the bioaccumulation evaluations for the SRA are summarized in Table 7.3-1. The table presents information for each COPC or COPC grouping for the following items.

- An indicator of whether a COPC or COPC grouping for all receptors is designated as (1) COPC, (2) (alr), or (3) (unc).
- The comparable COPC, (alr), or (unc) designator for individual receptors for all exposure scenarios for the receptor.
- The maximum HQ or HI value for each receptor for all exposure scenarios for the receptor.

The table also summarizes the number of COPCs and COPC groupings that fall into each of the designated categories (i.e., COPC, (alr), or (unc)) for both the composite of all receptors and each individual receptor.

#### **7.4 DESIGNATION OF COPCs TO BE CARRIED FORWARD FROM THE SRA TO A BERA**

The approach for assigning overall designations as to whether COPCs are carried forward from the SRA to a BERA is illustrated in Figure 7.4-1. The determination is based on the combination of information for the three lines of evidence considered in the SRA and presented above in Sections 7.1, 7.2, and 7.3.

Overall designations for COPCs and COPC groupings for the SRA are summarized in Table 7.4-1. The table presents information for each of the three lines of evidence and a composite designation for all lines of evidence.

The composite designation for each COPC based on all three lines of evidence is one of the following:

- COPC – if one or more individual lines of evidences is designated a COPC.
- alr – if all three lines of evidence do not exceed their associated criterion values the COPC is considered to have acceptably low risk (alr).
- data gap – if all three lines of evidence contain any combination of nb, unc, or nca.

All chemicals classified as COPC or data gap are carried forward to the BERA. COPCs with acceptably low risk for all lines of evidence are removed from further consideration (i.e., not carried forward to a BERA).