

Assessment of Chlordane Data in Santa Monica Bay

Recent chlordane data for Santa Monica Bay were compiled and subsequently compared against screening values to determine the magnitude and frequency of exceedances. To ensure comparability between datasets, identical summation procedures were used to calculate total chlordane for each dataset. These procedures were consistent with approaches described by NOAA (NOAA CPRD Standardized Sums) and SCCWRP (Chemistry Datasets Imputation Summation Procedures). Specifically, detected values were summed or the highest non-detect value was used if all values were undetected. In addition, if the highest non-detect value was greater than the sum of detected results, the non-detect value was included as the sum. If total chlordane was provided in the dataset along with the raw data, the totals were recalculated using this methodology, where possible, to ensure consistency between datasets.

Tables 1 and 2 summarize the assessment results for sediment and tissue data, respectively. The sediment data had very few total chlordane values above the California 303(d) Policy screening value of 6.0 micrograms per kilogram (ug/kg). Specifically, the data from Palos Verdes Shelf showed an exceedance frequency of 3.3%, while two other datasets with data in Santa Monica Bay had exceedance frequencies of 0.0% and 0.5% (Table 1). Combining these three datasets results in 4 out of 307 samples exceeded the screening value, or 1.3%. Two datasets with tissue data were also evaluated. Neither of these datasets showed total chlordane tissue results greater than the California Office of Environmental Health Hazard Assessment (OEHHA) screening value of 30.00 ug/kg (Table 2).

All data used in this evaluation were collected between 1998 and 2004, and are the most recent chlordane data readily available for Santa Monica Bay. Detailed evaluation of these data indicates attainment of narrative water quality objectives for both the sediment and tissue lines of evidence.

Table 1. Chlordane results from sediment samples in Santa Monica Bay

| Santa Monica Bay Sediment Data | | | | | | | | | | |
|--|-------------------|-----------------------|-----------------|-----------------|--------------|--------------------|------------------------|------------------------------|-------------------------------|-------|
| Data Source | Number of Samples | Number of Non-Detects | Minimum (ug/kg) | Maximum (ug/kg) | Mean (ug/kg) | Number of Stations | Period of Record | Number Above Screening Value | Percent Above Screening Value | Notes |
| LACSD: Palos Verdes Shelf data | 90 | 87 | 1.40 | 40.30 | 3.86 | 44 | 1998, 2000, 2002, 2004 | 3 | 3.3% | 1 |
| LACSD: Summary of Santa Monica Bay Bight 98 Data | 23 | 21 | 1.00 | 1.21 | 1.01 | 23 | 1998 | 0 | 0.0% | 2 |
| Hyperion WWTP: Santa Monica Bay data | 194 | 192 | 0.30 | 31.00 | 1.08 | 65 | 1998-2004 | 1 | 0.5% | 3 |

Notes:

- Four analytes were used to calculate total chlordane: cis-chlordane, trans-chlordane, oxychlordane, and trans-nonachlor. Total chlordane results were also provided, but were recalculated to replace the "ND" results with values as per the SCCWRP protocol. Data with MDLs > Screening Value were excluded from the analyses.
- Total Chlordane data provided by LACSD were recalculated to follow the SCCWRP/NOAA summation procedures. Totals are based on chlordane-a and chlordane -g.
- Number of analytes used for analyses varied (5, 7, or total provided in dataset).

Table 2. Chlordane results from tissue samples in Santa Monica Bay

| Santa Monica Bay Tissue Data | | | | | | | | | | | |
|--------------------------------------|------------|-------------------|-----------------------|-----------------|-----------------|--------------|--------------------|------------------|------------------------------|-------------------------------|-------|
| Data Source | | Number of Samples | Number of Non-Detects | Minimum (ug/kg) | Maximum (ug/kg) | Mean (ug/kg) | Number of Stations | Period of Record | Number Above Screening Value | Percent Above Screening Value | Notes |
| OEHHA/CFCP: Santa Monica Bay data | | 9 | 5 | 2.00 | 7.66 | 2.66 | 3 | 1999 | 0 | 0.0% | 1, 2 |
| Hyperion WWTP: Santa Monica Bay data | Fillet | 219 | 208 | 0.09 | 3.63 | 1.10 | 7 | 2000-2004 | 0 | 0.0% | 3 |
| | Whole Fish | 206 | 148 | 0.09 | 19.72 | 1.47 | 2 | 2000-2004 | 0 | 0.0% | 3 |
| | Total | 425 | 356 | 0.09 | 19.72 | 1.28 | 7 | 2000-2004 | 0 | 0.0% | 3 |

Notes:

- Total chlordane is the sum of five analytes.
- Stations include Santa Monica Pier (4110), Venice Pier (4120), and Party Boat to Malibu Kelp Beds (4140).
- Total chlordane is the sum of five analytes or the total chlordane measurement provided in dataset.