



Region 2 Water

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<http://www.epa.gov/region02/water/dredge/nondetect.htm>
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Non-Detect Policy

CENAN-OP-SD 28 February 1997

MEMORANDUM FOR: Contract Laboratories

SUBJECT: New approach to handling "non-detects" in elutriate and tissue data

1. Description of the current approach:

Currently, public notice tables and statistical comparisons are prepared using half the reported detection limits to estimate concentrations of contaminants that are below detection levels.

2. Proposed approach:

a) All analyses

"J" values represent maximum potential concentrations of contaminants that are detected below the laboratory method detection limits. Whenever "J" values are reported, they should be used as real values in the calculation of mean concentrations and for all statistical analyses.

b) "Non-detects" in elutriate data

i) If a concentration of a specific contaminant in an elutriate sample is reported as "non-detect" and the method detection limit *was not* achieved, then the reported detection limit should be used as an estimate of the (maximum possible) concentration of the contaminant in the sample.

ii) If a concentration of a specific contaminant in an elutriate sample is reported as "non-detect" and the detection limit *was achieved*, then half the achieved detection limit should be used as an estimate of the concentration of the contaminant in the sample.

c) "Non-detects" in tissue data

i) If the method detection limits were achieved and a concentration of a specific contaminant in a tissue replicate is reported as "non-detect", then half of the reported detection limit should be used as an estimate of the concentration in that replicate for calculation of means and statistical comparisons.

ii) If the method detection limit *was not* achieved and a concentration of a specific contaminant in a *test* organism tissue replicate is reported as "non-detect", then the reported detection limit should be used as a conservative estimate of the concentration in that replicate.

iii) If the method detection limit *was not* achieved and a concentration of a specific contaminant in a *reference* organism tissue replicate is reported as "non-detect", then zero should be used as a conservative estimate of the concentration in that replicate.

d) In the case of triplicate analyses:

i) If all three triplicates are "non-detect" and method detection limits *were* achieved, the mean detection limit of the triplicates should be calculated and the replicate should be reported as "non-detect" at the mean detection limit. Calculation of the five replicate mean will then be conducted following the guidelines outlined above in 2a,c.

ii) If there are "detects" and "non-detects" reported in the triplicates, or if method detection limits *were not* achieved in one or more of the triplicates, the non-detects should be treated as outlined in 2a,c, and the resultant triplicate mean used in the calculation of the five-replicate mean.

3. Reporting conventions for Public Notice tables

a) Statistical comparisons of tissue to reference should be conducted using the methods for assigning values to non-detected replicates outlined above in Section 2 a,c-d. As before, significant exceedances will be identified by an asterisk, placed adjacent to the mean test concentration.

b) If 'detect' (including J values) and 'non-detect' values occurred, calculate and report the mean using the appropriate estimates of the non-detect replicates.

c) When all five tissue replicates are undetected, regardless of the detection limit, place 'nd' in the concentration column and record the mean detection limit in the detection limit column. Note that you may obtain ND* (statistically significant non-detects) using the above treatments of non-detects.

d) Note: previously, values equal to half of the mean detection limits had been recorded in the detection limit column. Under this guidance, you must record the mean detection limit itself.

e) Include the following footnotes:

i) Elutriate and Sitewater Tables

- Concentrations shown are the mean of three replicate analyses.
- ND = Not detected
- Total PCB = sum of congeners reported*2
- Total DDT = sum of 2,4'- and 4,4'-DDE, DDD, and DDT
- Means were determined using conservative estimates of concentrations of constituents that were at concentrations below the detection limit

ii) Tissue Tables

- Concentrations shown are the mean of five replicate analyses.
- *Significantly higher than reference at 95% confidence
- ND = Not detected
- Total PCB = sum of congeners reported*2
- Total DDT = sum of 2,4'- and 4,4'-DDE, DDD, and DDT
- Means and statistical comparisons were determined using conservative estimates of concentrations of constituents that were at concentrations below the detection limit