

**ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
CONTAMINATED SITES PROGRAM**

Technical Memorandum – 08-001

Date August 12, 2008

**GUIDELINES FOR DATA REPORTING, DATA REDUCTION,
AND TREATMENT OF NON-DETECT VALUES**

PURPOSE:

The Alaska Department of Environmental Conservation (DEC) has developed a state specific Risk Assessment Procedures Manual which provides risk assessment procedures for use in preparing human health and ecological risk assessments under the Oil and Other Hazardous Substances Pollution Control site cleanup rules, 18 Alaska Administrative Code (AAC) 75 and the Underground Storage Tank regulations, 18 AAC 78. This memo provides clarification on several data reduction issues commonly encountered in risk assessments, but shall also apply to site investigation, characterization, and remediation work performed under the above referenced regulations.

BACKGROUND:

In order to ensure consistent data when making site management decisions, the department provides the following clarification on data reduction reporting requirements.

1. Reporting of multiple results for the same constituent in the same sample.
2. Reduction of field duplicates to derive one value for use.
3. Handling of non-detect results in the calculation of exposure concentrations.

DATA REPORTING:

1. Reporting of multiple results for the same constituent in the same sample

In the event that more than one contaminant result is reported due to multiple analyses by a single method, the highest detected value will be used.

If more than one result is reported from alternate analytical method(s) for a single contaminant, the highest detected value **OR** the result from the confirmatory method shall be used. This determination is made on a compound specific basis. Any method specific reporting requirements should also be adhered to.

If results are reported as non-detect by multiple analyses or methods, the undetected result with the lowest detection limit (DL) may be selected for reporting.

2. Data reduction from field duplicate samples

ADEC regulates based on the maximum result or statistically valid 95% upper confidence limit (UCL) per 18 AAC 75.380(c)(1). Therefore, ADEC requires that the most conservative detectable sample result of the primary and duplicate results be used for management decision making purposes. Primary and duplicate results shall not be averaged.

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If the primary and duplicate results are both reported as non-detect (ND), the minimum detection limit (DL) should be presented with the data qualification flag denoting the result as ND (U-qualified)

If one of the results is reported as non-detect and the other is a detectable concentration, the detected value should be used.

3. Handling of Non-Detects (NDs) in the calculation of exposure concentrations

Until recently, the one-half of the method detection limit (MDL/2) substitution method has been the most commonly used method to compute the various statistics of interest for data sets with non-detect (ND) results. The primary reason for the common use of this method has been the lack of the availability of other defensible methods and associated programs that can be used to estimate the various environmental parameters of interest. Today, several other methods (e.g., Kaplan Meyer (KM) method, bootstrap methods) with better performances are available that can be used to compute the various upper limits of interest. Some of these parametric and nonparametric methods are available in ProUCL 4.0. ADEC recommends the use of this EPA sponsored software application and the ProUCL 4.0 recommended method of evaluating NDs. The use of one-half the detection limit substitution (DL/2) method is not recommended as the default approach in statistical procedures that may be used in decision-making processes.

Pro UCL 4.0 information can be found online at the following EPA website:

<http://www.epa.gov/nerlesd1/tsc/software.htm>