Department of Defense Environmental Data Quality Workgroup (EDQW)

Laboratory Control Sample Control Limits Study

15 July 2013

Executive Summary

This report summarizes the process, methodology, and results of a new study of U.S. Department of Defense laboratory control sample (LCS) control limits. Existing limits were published in the 2004 report, "Development of Department of Defense Laboratory Control Limits" (DoD, 2004). The current effort was undertaken with the goals of updating the existing limits and providing limits for more methods and analytes.

Key results and outcomes from this study include the following:

- LCS control limits are available for 23 methods (increased from 9 methods in 2004).
- The number of unique analyte-matrix-method combinations with LCS control limits increased from 454 to 1,258.
- The mean LCS percent recovery improved for 72% of the 2004 limits.
- The mean recoveries for LCS samples range as described below:
  - 97% of the LCS control limits are centered at 60% recovery or higher.
  - 86% of the LCS control limits are centered at 80% recovery or higher.
  - 67% of the LCS control limits are centered at 90% recovery or higher.
- The ranges of the LCS control limits varied as described below:
  - 5% of the LCS control limit ranges are $\pm$15% or tighter.
  - 14% of the LCS control limit ranges are $\pm$20% or tighter.
  - 38% of the LCS control limit ranges are $\pm$30% or tighter.
  - 78% of the LCS control limit ranges are $\pm$50% or tighter.
  - 97% of the LCS control limit ranges are tighter than $\pm$75%.

Section 1 provides an overview of the process. Section 2 describes the data collection process. Section 3 describes the processing and cleaning of the data. Section 4 describes the method used to determine limits. Section 5 summarizes the new limits analyte-matrix-method. Section 6 compares the new limits with the 2004 limits. Section 7 provides brief conclusions. Detailed lists of limits by analyte, and figures illustrating the new limits, are included in attached appendices.

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1.0 Purpose

The DoD Environmental Data Quality Workgroup (EDQW) determined that both DoD and DOE would benefit from updating the existing Laboratory Control Sample (LCS) control limits that were established as a result of a study conducted in 1999 and reported in the 2004 LCS study (DoD, 2004).

The EDQW developed a plan for collecting data from DoD ELAP and DOECAP laboratories, analyzing the data, and using the data to set revised LCS control limits. This document describes the study planning, implementation, and resultant LCS control limits. The initial study in 2004 was based on a limited data set and did not include all the laboratories and methods that are now a part of DoD ELAP and DOECAP. The objective of the study was to develop new LCS limits and provide values for an expanded scope of analytes-matrix-method.

2.0 Data Collection Process

2.1 Laboratory Population (DoD ELAP and DOECAP)

The DoD and DOE provided complete lists of all laboratories in their programs. When these lists were merged, the population of potential participant laboratories totaled 114.

2.2 Website Description and Upload Instructions

After the master list of potential participant laboratories was constructed, the laboratories were contacted and provided with a brief description of the LCS study, a confidential username and password, and instructions for compiling and uploading relevant LCS study results on the LCS study website (lcs.neptuneinc.org). Laboratories were asked to provide LCS results that were collected where Quality Systems Manual (QSM)-based processes were being practiced in their laboratory. They were asked to go back one full year to gather their LCS results, except when they needed to go back farther to compile at least 30 results for a particular analyte-matrix-method. No data older than three years were accepted. The upload instructions and an example data file were also posted on the LCS study website. The introductory emails, the upload instructions, and the example data file are included as Appendix A.

The data collection phase of the LCS study began on June 18, 2012. The LCS website was deactivated on July 31, 2012, completing the data collection phase of this LCS study.

2.3 Summary of Uploaded Data

Of the 114 laboratories invited to participate in the LCS study, approximately 10% self-identified as ineligible because they did not run any of the methods included in this study. More than 50[1]% of eligible laboratories provided LCS results data for this study.

Several of the 114 laboratories on the DoD and DOE list were laboratory facilities within a larger organization. For a couple of these larger organizations, one contact person compiled and uploaded the LCS study results for all of the laboratory facilities within that organization. This effectively meant that the data uploaded during the data collection phase under a particular username could potentially represent more than one laboratory facility. Consequently, it was difficult to determine the exact number of facilities contributing data. Data were uploaded through the website using 39 different usernames. Based on discussions with the participating laboratories, it is our understanding that the data from the 39 sources actually represent 52 distinct laboratory facilities.

[1] Nine laboratories informed the study team that they had not ever run any of the methods included in the LCS study under their DoD ELAP or DOECAP programs. Fifty-two laboratories provided data. Assuming the same ratio (9:52) for the entire population leads to an estimate of 94 eligible laboratories. The 52 participating laboratories then represent 55% of all eligible laboratories.

Throughout this report, the word “laboratory” indicates a unique source of data. It should not be interpreted as a unique facility. “Laboratory” may also represent a corporate laboratory that contributed data combined from multiple facilities.

During the data collection phase, 6,558,484 records were uploaded. Ninety-one percent of these records were successfully processed and used for setting control limits. After the data were processed and cleaned as described in subsequent sections, limits were set for 23 methods and included 1,258 analyte-matrix-method combinations. These control limits were based on nearly 6,000,000 LCS results contributed by DoD ELAP and/or DOECAP laboratories. By comparison, in the 2004 LCS control limits study, limits were set for 9 methods and 454 analyte-matrix-method combinations.

3.0 Data Processing and Cleaning

As with any data collection effort, the data for the LCS study required some preparation. To ease the burden on participating laboratories, data requirements were as flexible as possible. Allowing this flexibility led to the need for appreciable data processing and cleaning prior to analysis. The steps taken to prepare the data for inclusion in the LCS control limits calculations are described below. These data cleaning steps identified numerous records that could not be directly used in the LCS control limit calculations for the reasons described below, and therefore were removed from the working dataset. Approximately nine percent of the original data were excluded based on this process.

3.1 Creating Consistent and Accurate Text Fields

To encourage participation and accommodate the different types of data-management software employed at different laboratories, few requirements other than the general type of value (text or numeric) were placed on the format of the uploaded data. These loose requirements led to a need to accurately and consistently combine fields across laboratories. For example, accepted descriptions for solids included entries such as “s,” “soils,” and “sediment.” “Liquid,” “groundwater,” and “drinking water” were entries all assigned to the “water” matrix.

Because the interpretation and assignment of reported fields to groups for analysis are subjective; these mappings were created, documented, and reviewed by the study team in an iterative process. The following sections outline issues and solutions specific to individual fields in the datasets.

3.1.1 Matrix Descriptions

Nearly 50 different descriptions were used in the matrix field. Study team members identified which terms could be clearly assigned to the groups “gas,” “solid,” and “water.”

3.1.2 Analyte Name and Chemical Abstracts Service Number

Both the analyte name and a Chemical Abstracts Service (CAS) identification (ID) number were requested in the data uploads. Where possible, the CAS ID was used as the primary identifier for a specific analyte. As a numeric value, it is less ambiguous than analyte names that can contain different spellings or additional characters. Mappings of analyte names to CAS IDs were created and reviewed by study team members.

When a clear and correct mapping could not be made between the CAS ID and the reported analyte name, the record was excluded from further analysis. After grouping records with common CAS IDs, a review was conducted to ensure that all analyte names were correct for each CAS ID.

For example, records with CAS ID 100-25-4 may have been associated with the analyte names “1,4-dinitrobenzene,” “14-dinitrobenzene,” “p-dinitrobenzene,” or “magnesium”. In this example, “magnesium” was not a correct analyte name for CAS ID 100-25-4, and therefore that record was removed from the active dataset.

3.1.3 Analytical Method

Similar issues arose when reviewing reported analytical methods. These fields were reviewed by study team chemists to ensure that reported analytical methods were correctly identified before analysis. Again, any records where the reported analytical method could not be clearly identified were excluded from further analysis.

3.1.4 Units

For spiked and recovered concentrations, values were converted to a consistent unit of measure.

3.2 Accuracy of Percent Recovery

Percent recovery was not a required field. For records without a reported percent recovery value, a calculated percent recovery (percent recovered = recovered concentration ÷ spiked concentration) was used in the analysis. However, when percent recovery, spiked concentration, and recovered concentration were all reported, reported percent recovery was compared with a calculated percent recovered. If this value differed by more than 5% from the reported percent recovery, the result was excluded.

3.3 Blunders

Before testing for statistical outliers, it is important to remove clearly erroneous data from the dataset. Using the previous steps, data with incorrect analyte names, inconsistent units, or other obvious problems were removed from the active dataset. This step was used to remove data with clearly incorrect numeric results.

LCS samples with recoveries of over 500% were occasionally reported in this study. Those results, if left in the datasets for calculation of the control limits, would have severely limited the project team's ability to identify other statistical outliers in the datasets, and would have introduced significant bias in the control limits.

At the other extreme, some results with recoveries reported below 2% were reported. Analysis of the data showed a gap between these very low reported results and the remainder of the reported results. One possible explanation is that these were incorrectly expressed as proportions rather than percent recovery rates (e.g., 98% reported as 0.98%, or 105% reported as 1.05%).

Values greater than 500% or less than 2% were assumed to be unrealistically large or small and may have been caused by errors in data entry, unit conversions, or data handling. Records with percent recoveries greater than 500% or less than 2% were removed before statistical testing for outliers to avoid their potential impact on the efficiency of the outlier tests.

3.4 Outlier Identification and Censoring

Outliers are data points that do not come from the same distribution as the rest of a dataset. These can occur for many reasons and can have a substantial impact on the results if left in the dataset. Generally, with environmental data, even if outliers are identified, they should not be

removed without substantiating evidence that they are not accurate reflections of the conditions within a sample. In the LCS study, however, the purpose was to identify how DoD ELAP and DOECAP laboratories have performed on LCS samples and to set control limits based on those results. For this purpose, outliers were identified and removed. However, the method selected for outlier removal was carefully considered to ensure that it did not rely heavily on assumptions of normality (i.e., a normal or Gaussian distribution), and the outlier sensitivity was set such that only a small percentage of points (<5%) could be considered outliers and the remaining dataset would remain reasonably broad to account for the variability among and within laboratories.

Outliers were identified using box plots. For each analyte, points falling outside the whiskers of a traditionally (Tukey) constructed box plot were considered outliers. Details on the construction of the box plots and whiskers are discussed below.

For each analyte-matrix-method dataset, values that were not within 1.5 times the interquartile range (Q3 - Q1) of the quartiles were identified as outliers. That is, any value less than Q1 - 1.5(Q3 - Q1) or any value greater than Q3 + 1.5(Q3 - Q1) was identified as an outlier. When a distribution is normal, a small amount of data will fall outside this range (Frigge, et. al., 1989). Approximately 2.5% of the original data were rejected as outliers.

3.5 Laboratories with High Percentages of Outliers

To avoid inclusion of laboratories that performed very differently from the remainder of the laboratories performing the same method, a test for "outlier laboratories" was utilized. Once individual outliers were identified, the number of outliers and the number of records from each laboratory were summarized. If more than 25% of a laboratory's records for a given analyte-matrix-method combination were identified as outliers, all records from that laboratory for that analyte-matrix-method combination were excluded from limit calculations. Data were not excluded based on this criterion if the data came from one of the corporate laboratories with multiple facilities.

3.6 Criteria for Calculating Limits

To ensure that statistically calculated LCS control limits are based on a sufficient number of samples, after the review and processing discussed above a minimum of 100 records was required for each analyte-matrix-method combination. In the 2004 LCS study, a minimum size of 15 records was applied as a criterion, and the lowest number actually used in calculating a value was 55. In the current study, with the existence of 114 DOD ELAP and DOECAP laboratories, it was possible to require a more substantial dataset upon which to base the LCS control limits.

To ensure that a diverse number of laboratories contributed to the data used in calculating limits, a minimum of four contributing laboratories was required. An exception was made if one of the contributors was a corporate laboratory with multiple facilities. In this case, the limit was set to two. Amongst the corporate laboratories with multiple facilities, the minimum number of facilities represented was four. The rational in lowering this limit is that if one of the laboratories represents four or more facilities, the criterion is met.

3.7 Summary of Data Processing and Cleaning

Table 1 provides a summary of the number of records excluded in each processing step. Following this data cleaning, 91% of the originally uploaded records were available for use in determining the updated LCS control limits.

Table 1. Percentage of records excluded through processing steps

Task	Task Description	Records Removed
Consistent records	Records with a matrix that did not fit soil, water, or gas categories (e.g., toy) were omitted. Records where the analyte name did not match the CAS ID were also removed.	1.9%
Percent recovery	Records where either percent recovery or spiked and recovered concentrations were not provided, and also those where the stated percent recovery differed from the percent recovery calculated from the raw data by more than 5%, were omitted.	1.9%
Blunders	Records with reported percent recovery less than 2% or greater than 500% were removed.	2.2%
Outliers	Records identified as outliers by the box plot method were omitted.	2.5%
Outlier laboratories	If more than 25% of a laboratory's records for a analyte-matrix-method combination were identified as outliers, then all results from that laboratory were removed for that analyte-matrix-method.	0.2%

4.0 LCS Control Limits Determination

From the prepared data, individual data sets were available for 1,258 analyte-matrix-method combinations. These analyte-matrix-method datasets, representing LCS results from DoD ELAP and DOECAP laboratories, were used to set appropriate control limits for future LCS results.

4.1 Calculate LCS Control Limits

Based on the contributed laboratory LCS sample data, control limits were calculated for all analyte-matrix-method combinations that met the criteria for having sufficient data.

Control limits were calculated as the sample mean $\pm$ 3 $\times$ sample standard deviation.

Where is the sample mean, and SD is the sample standard deviation. As calculated, if the sample population is normally distributed, the statistically-based expectation would be that 27 LCS results out of every 10,000 to exceed these limits.

In this study, if lower control limits were calculated to be negative, they were set at zero for the published limits. The upper control limits were not truncated.

4.2 Evaluate Reliability and Robustness of Results

To evaluate the robustness of the control limits, a cross-validation procedure was used to simulate the application of these limits to laboratories not participating in their creation. In turn, data from each laboratory were withheld from the data used to calculate the limits. The withheld records were then evaluated based on the estimated control limits. Overall, 0.5% of the samples exceeded the calculated limits. The exceedance percentage for each laboratory was then calculated. Exceedance percentages by laboratory ranged from 0% to 2.7%. These low “failure” rates demonstrate that the control limits are robust and may reasonably be applied to all DoD ELAP and DOECAP laboratories.

5.0 Summary of Findings

The full list of LCS control limits are presented in Appendix B. They are sorted by analytical method and matrix, with all analytes within each matrix-method combination shown together in a single table. The LCS limits are also depicted graphically, in the same groupings, in Appendix C.

This study involved 23 analytical methods for solid, water, and gas matrices, which resulted in 1,258 analyte-matrix-method combinations with sufficient data to set LCS control limits. The following is a summary of the limits generated using the selected methodology and an analysis of quantitative results:

- The mean recoveries for LCS samples range as described below:
  - 97% of the LCS control limits are centered at 60% recovery or higher.
  - 86% of the LCS control limits are centered at 80% recovery or higher.
  - 67% of the LCS control limits are centered at 90% recovery or higher.

- The ranges of the LCS control limits varied as described below:
  - 5% of the LCS control limit ranges are ±15% or tighter.
  - 14% of the LCS control limit ranges are ±20% or tighter.
  - 38% of the LCS control limit ranges are ±30% or tighter.
  - 78% of the LCS control limit ranges are ±50% or tighter.
  - 97% of the LCS control limit ranges are tighter than ±75%.

The following figures illustrate the range of limits based on matrix and method. In Figures 1 to 3, for each matrix the range of the mean percent recovery of all analytes for that method is presented as a horizontal bar. For those matrix-method groups with only one analyte, it is presented as a circle. Figures 4 to 6 show the standard deviation of the recoveries divided by the mean recovery (relative standard deviation [RSD]). A lower value for RSD indicates a more consistent process. The widths of the horizontal bars show variability amongst analytes within a specific method. Specifically, the horizontal boxes contain the middle 50% of the RSDs, known as the inter-quartile range (IQR). The vertical line is the median RSD. The thin horizontal lines ("whiskers") extend to show the range of other RSDs that fall within one-and-a half times the IQR from the IQR (a standard statistical definition of reasonably expected results). RSD results beyond that range are shown as individual dots. This depiction allows one to quickly see how the RSDs are distributed for each method.

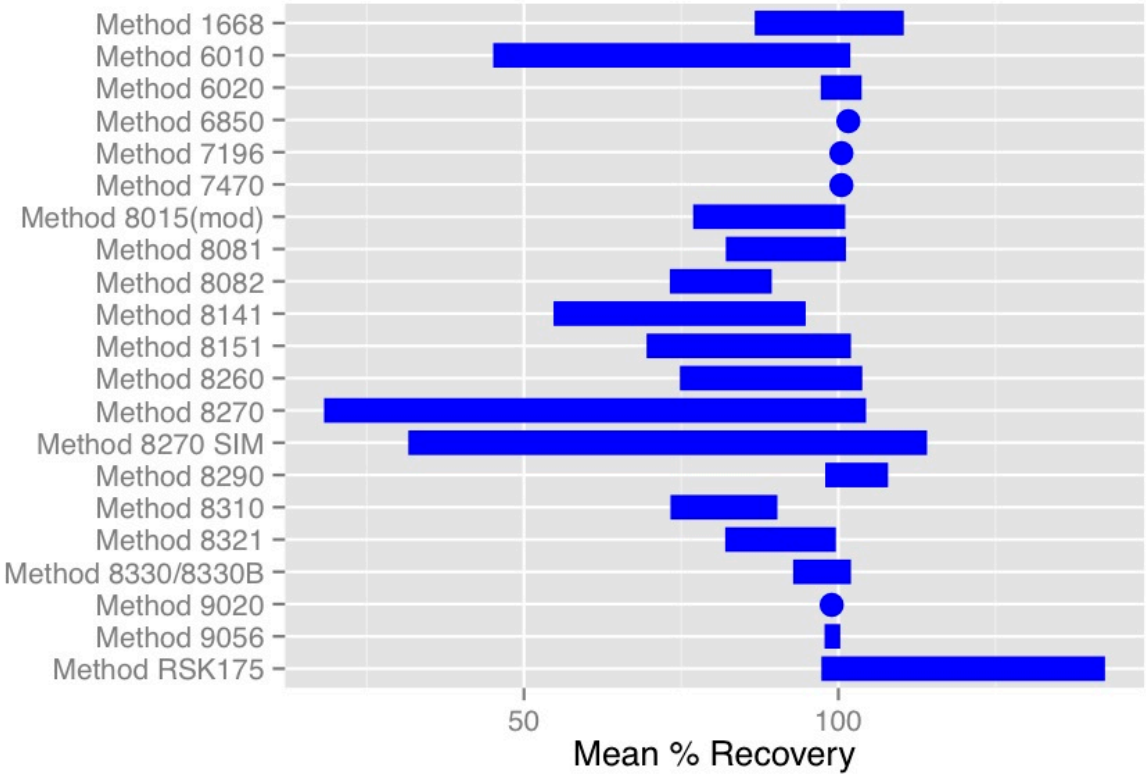


Figure 1. Range of mean percent recoveries for water matrix analytes

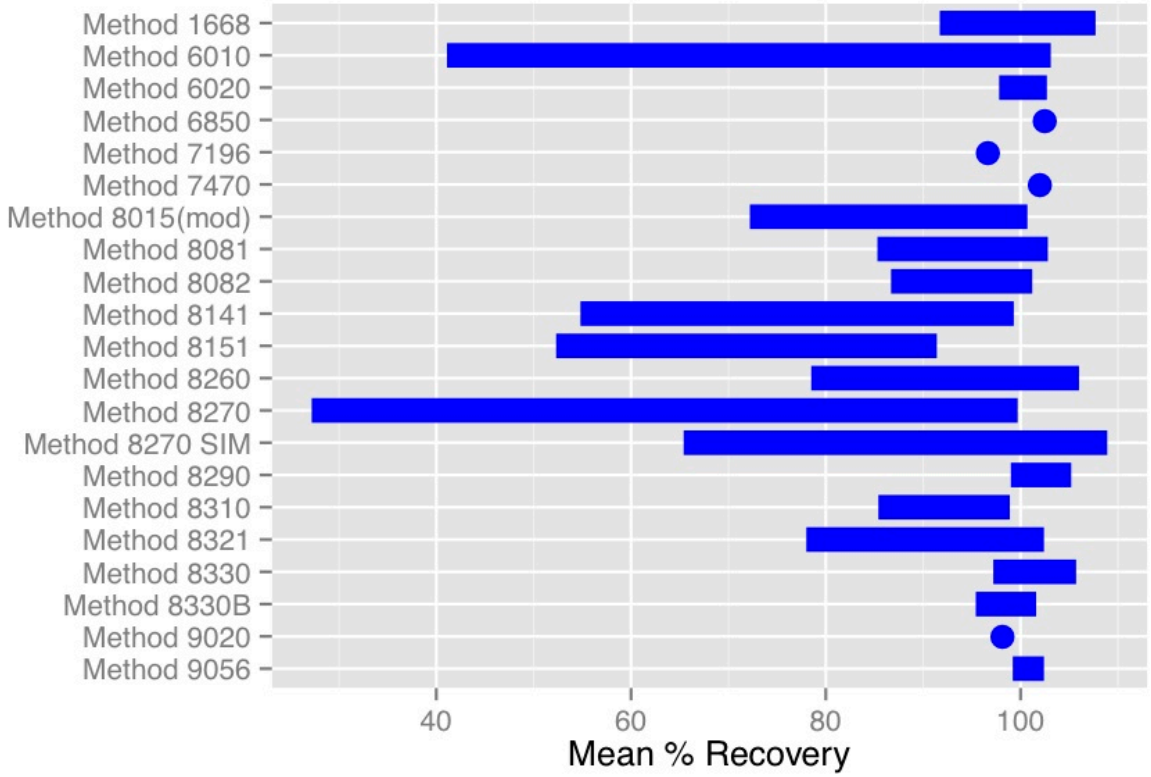


Figure 2. Range of mean percent recoveries for solid matrix analytes

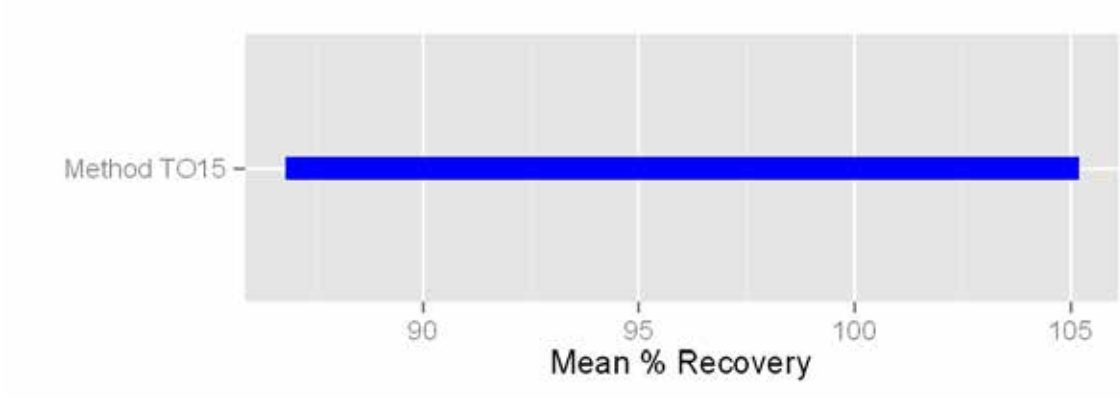


Figure 3. Range of mean percent recoveries for gas matrix analytes

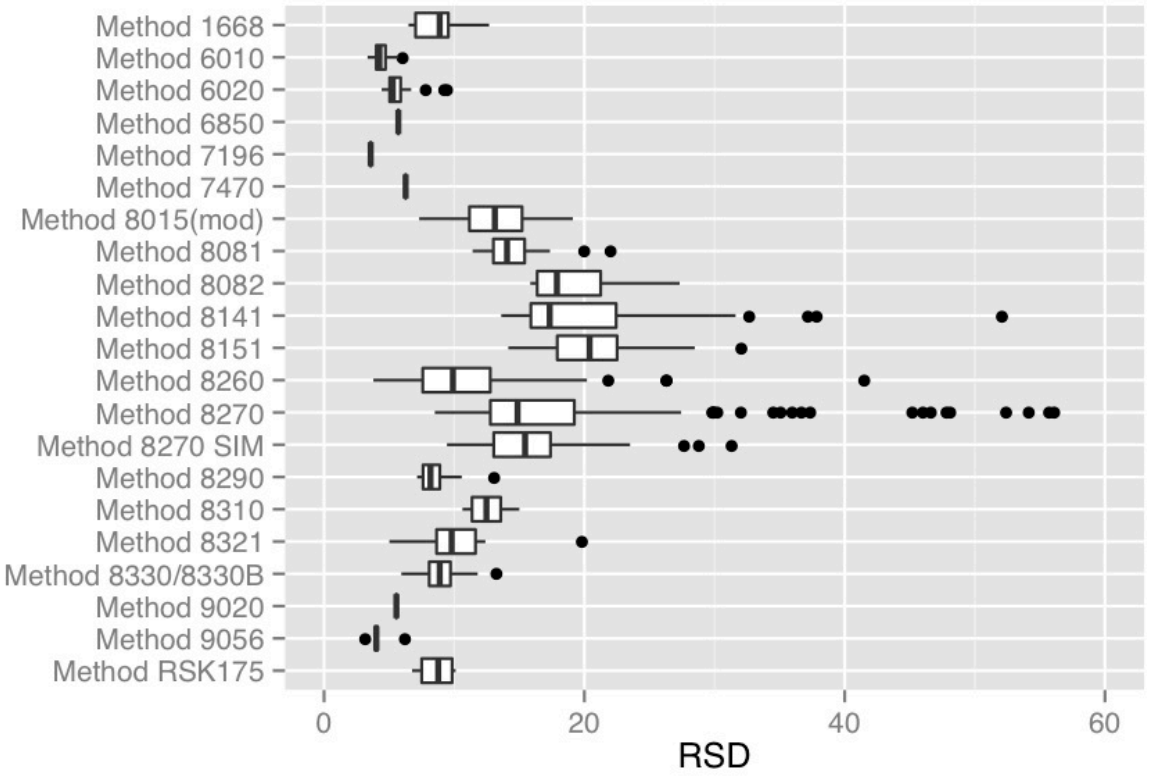


Figure 4. Distribution of RSD of methods for water matrix analytes

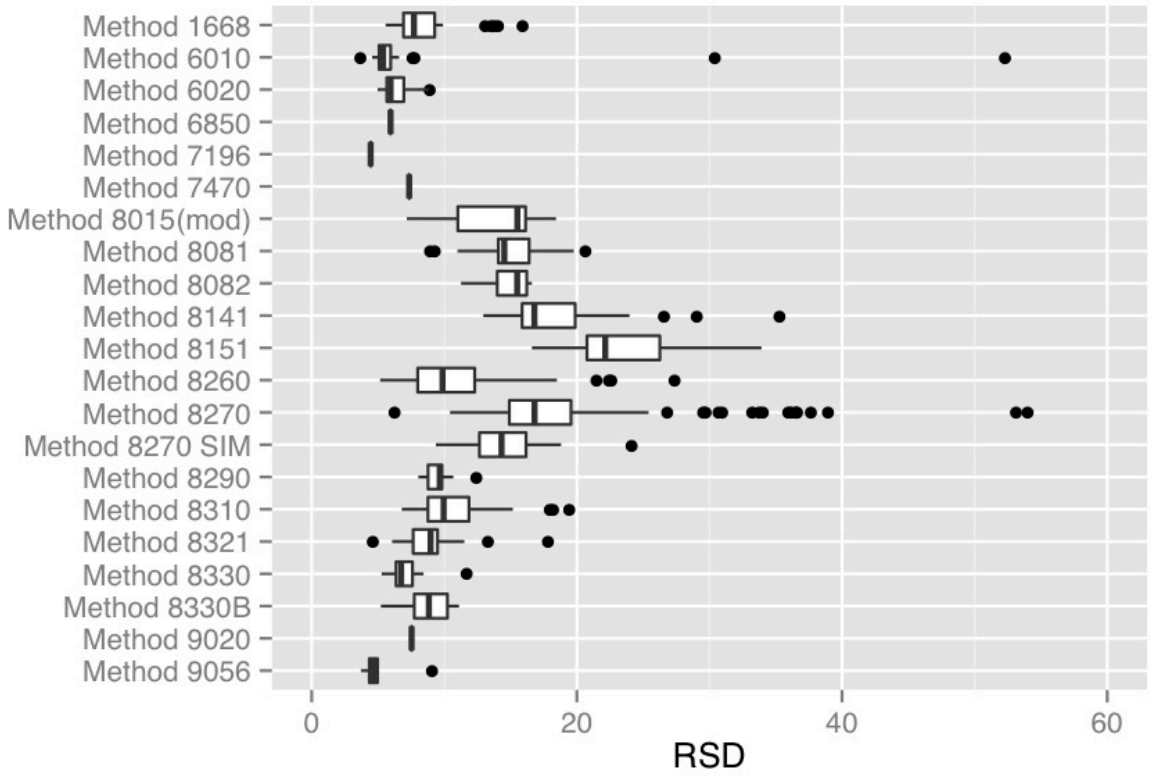


Figure 5. Distribution of RSD of methods for solid matrix analytes

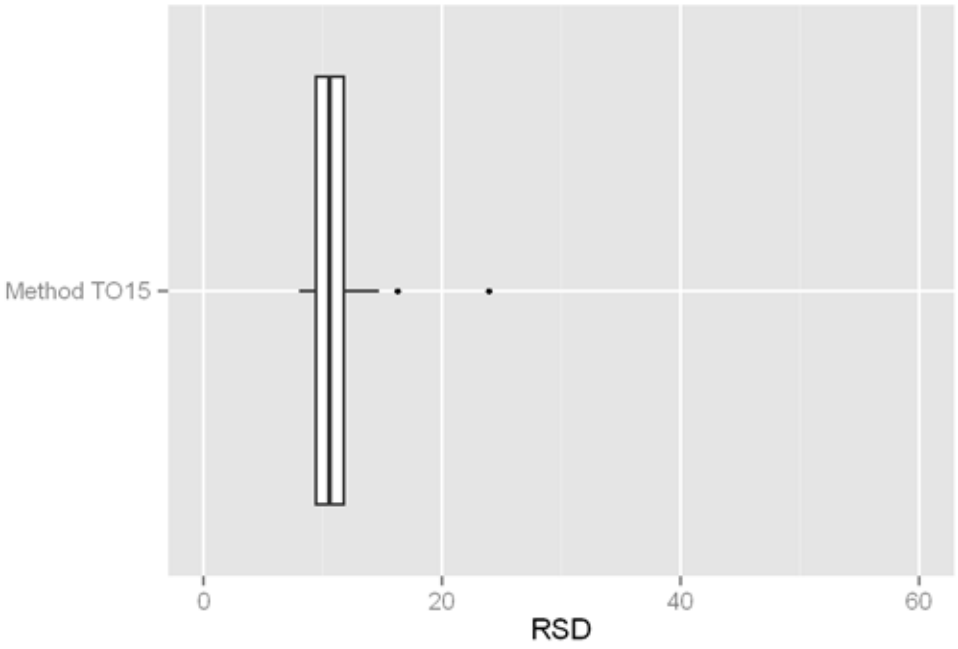


Figure 6. Distribution of RSD of methods for gas matrix analytes

6.0 Comparison to Other Limits

In this section, the new control limits are compared with the 2004 LCS control limits to identify appreciable changes. The LCS control limits are also compared to the National Environmental Laboratory Accreditation Conference (NELAC) Institute (TNI) proficiency testing (PT) acceptance intervals to determine if they may have some beneficial similarities.

6.1 Comparison with 2004 LCS Control Limits

Because LCS control limits are a function of both the mean recovery and the standard deviation of the recoveries, both aspects are evaluated together. The top panel in Figure 7 shows, by method, the ratio of the standard deviation of analyte recoveries calculated in the current study with those calculated in 2004. An increased range of concentrations results in a ratio greater than 1. A decrease in range results in values less than 1. For example, a ratio of 0.5 indicates the new range is half as wide as the 2004 range. For Methods 8082, 8260, 8310, and 8330, the range of most analytes decreased. The range for analytes in the remaining methods generally increased. This information should be considered with the magnitudes of the 2004 standard deviations (shown in the second panel of Figure 7). For example, the method with the largest standard deviations in the 2004 data (Method 8151) showed the biggest decreases in the new data (all but one analyte had a standard deviation less than half the magnitude of its 2004 standard deviation).

The bottom two panels of Figure 7 show changes in the mean values from the 2004 limits. Mean value changes are presented with respect to the difference between the mean value and 100% recovery. Positive values indicate that mean values are closer to 100% than the 2004 mean values were. Again these changes should be considered with respect to the 2004 mean values. For example, 2004 mean recoveries for method 6010 were already very close to 100%, so the incremental improvement can only be very small before reaching 100% recovery. Conversely, for methods with mean recoveries in 2004 that were further below 100% (e.g., methods 8270 and 8310), a larger improvement in mean recoveries is apparent in the current LCS study results.

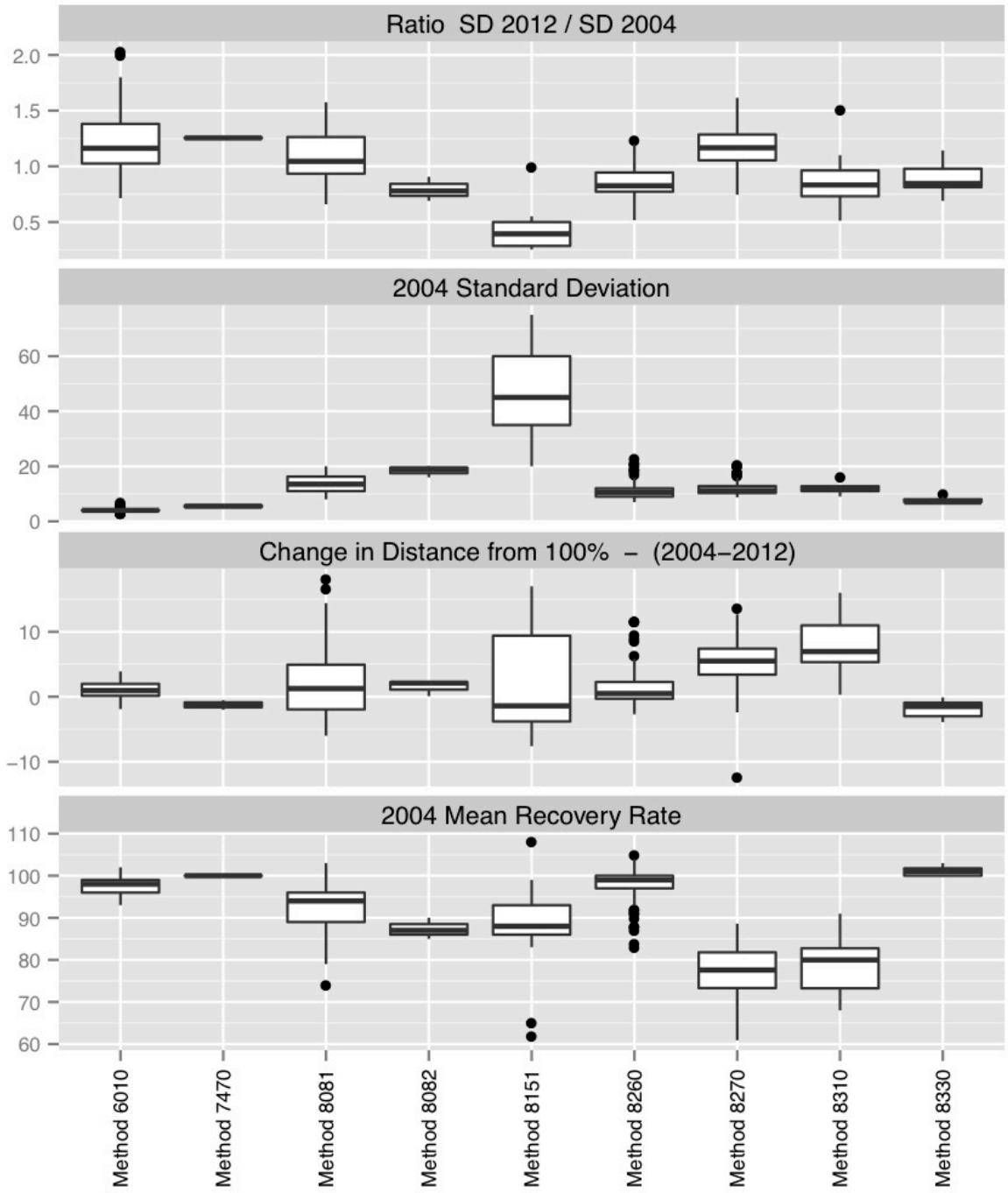


Figure 7. Comparisons of changes in standard deviation and mean values

6.2 Comparison of LCS Control Limits with TNI PT Acceptance Limits

After LCS control limits were computed, comparisons were made between acceptance limits from the TNI PT program and the derived LCS control limits. The TNI PT acceptance limits are used to define the range of acceptable results when an analyst runs a sample of unknown concentration. This is quite different from the use of LCS samples, which are of a known concentration, and are generally prepared to be near the midpoint of the instrument's calibration curve.

TNI publishes fields of proficiency testing (FoPT) tables of the concentration ranges in which PT samples can be produced for each analyte in one of three matrix types: drinking water, non-potable water, and solids/chemical materials. For each analyte in each matrix type, the midpoint of the allowable concentration range was computed and stored. These midpoint concentrations were used as the points from which the acceptable recovery percentages were calculated.

A table was created to map each NELAC analyte code to the correct CAS ID. Analytes were then matched to the unique analyte-matrix combinations from the LCS study results. Those TNI results that did not contain a corresponding analyte-matrix match in the LCS study results were dropped. Note that the TNI FoPT tables are not method-specific, so all methods included in the LCS study were associated with the analyte-matrix combinations to which they applied. Also, note that TNI has separate FoPT tables for potable and non-potable water. The results from both water FoPT tables were combined for comparison with the LCS control limits. For purposes of this comparison, the TNI limits were computed with concentrations at the midpoint of the analyte's acceptable range as defined in the TNI FoPT tables.

Using these combined data, the left panel of Figure 8 displays differences between LCS and TNI PT limit means and ranges. To develop this figure, the distance from perfect (100%) recovery was determined for each analyte. That distance for the LCS limit was subtracted from that distance for the TNI limit. Positive values indicate that mean LCS results are closer to 100% recovery than their TNI counterparts, while negative values indicate that LCS percent recoveries are farther from 100% than the expected TNI recoveries. For example, if the mean LCS control limits for analyte X are 95%, while the mean percent recovery for the TNI acceptance interval for analyte X is 90%, analyte X would be represented on this figure as 90 –95 = - 5%.

The right panel of Figure 8 is constructed similarly but based on ranges instead of means. Positive values in this plot indicate that the range for TNI PT limits is wider than the LCS control limits. For example, if the range of the LCS control limits for analyte X are 30%, while the range of the analyte X TNI PT acceptance limits is 40%, analyte X would be represented on this figure as 40% – 30% = 10%.

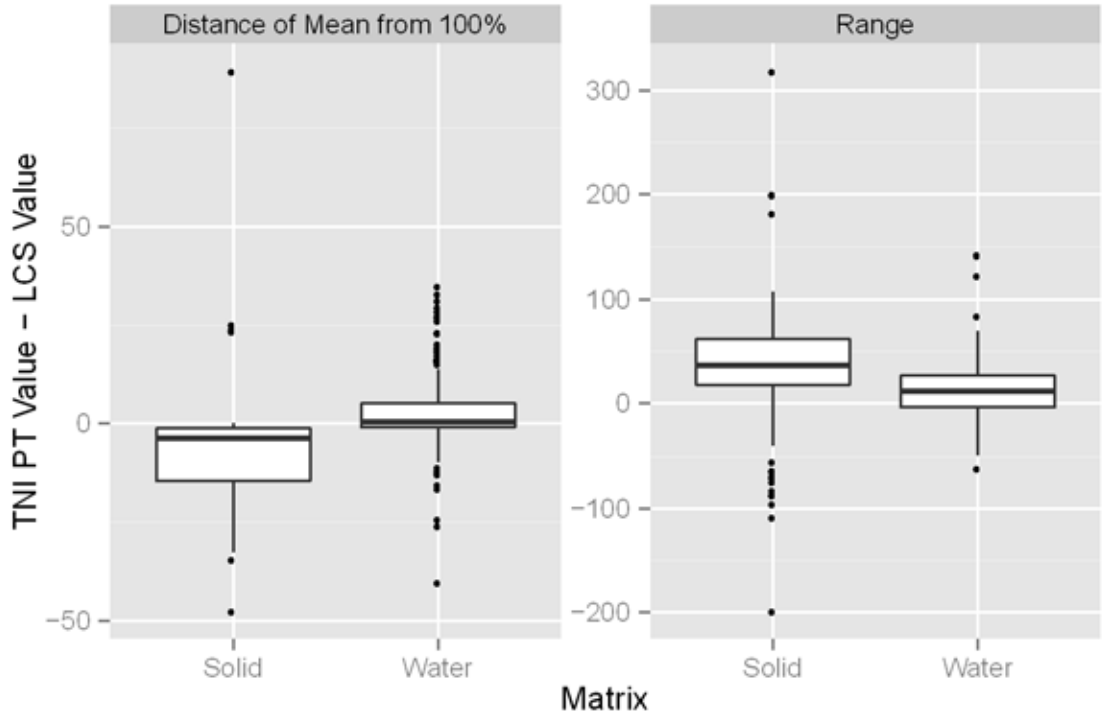


Figure 8. Comparison of LCS to TNI PT means and ranges

Based on these graphical data summaries, it is apparent that for solids, the TNI PT acceptance intervals are centered closer to 100% recovery than the corresponding LCS control limits (as evidenced by the preponderance of negative results for solids in the left panel of Figure 9), and that the LCS control limits are tighter than the corresponding TNI PT acceptance intervals (as evidenced by the preponderance of positive results for solids in the right panel of Figure 10).

Examination of these comparisons illustrates that LCS control limits and their TNI PT acceptance limit counterparts may be quite similar, or may differ in either the center or width of the intervals. This information is illustrative only to the extent that it shows that the TNI PT acceptance limits would not serve as reasonable surrogates for LCS control limits.

7.0 Conclusions

This LCS study has provided the opportunity for all DoD ELAP and DOECAP laboratories to contribute to future LCS control limits. Based on approximately six million records of LCS results over the past year (or in some cases up to three years), updated LCS control limits have been established (see Appendix B). These limits have been established using practical and statistical techniques and are set at a distance of three sample standard deviations from the mean recovery determined from the available real-world LCS data. Specific uses for these LCS control limits may be assigned within the DoD and DOE complying with the DoD/DOE Quality Systems Manual or other quality systems.

8.0 References

DoD, 2004. Development of Department of Defense Laboratory Control Sample Control Limits. Environmental Data Quality Workgroup, Charleston, SC with Versar, Inc.

DoD, 2010. Quality Systems Manual for Environmental Laboratories, Version 4.2. Based on NELAC Voted Revision 5 June 2003.

Frigge, M., D. Houglin, and B. Iglenwicz (1989), "Some Implementations of the Boxplot", The American Statistician, 43, pp. 50- 56.

9.0 Appendices

A. Data Requests and Instructions

B. LCS Control Limits

C. Plots of LCS Control Limits

Appendix A
Data Requests and Instructions

Laboratory Control Sample Study

Data Upload Instructions

This documents the Electronic Data Deliverable fields and formatting requirements for uploading data to the Laboratory Control Sample (LCS) study database. Data may be uploaded at http://lcs.neptuneinc.org. Each laboratory contributing data has been assigned a unique username and password for this website. Any questions or comments concerning the upload process may be directed to our contractor, Kelly Black, at Neptune and Company, Inc. [kblack@neptuneinc.org, 720-746-1803*5# (office), 303-358-6134 (mobile)]

General Requirements for the Data File

The general formatting requirements for the data file are given below. An example data file entitled "ExampleDataFile.csv" was emailed with these instructions, and can also be found on the LCS study website under the "Documents" menu.

- Data files must be in comma-separated values (.csv) format.
- The data file must contain a header row with field names that exactly match those in this data dictionary.
- Missing or not applicable entries should be blank, NA, or na in the data file. Note that a blank entry is denoted by consecutive commas in a .csv file.
- Do not censor any LCS data; i.e. submit all LCS samples, including failures.
- Report LCS data by method and version number, if available.
- Report all relevant LCS results associated with DoD and DOE projects, or any other projects that are conducted under the same conditions.

Please include all LCS data for the following methods:

Analysis Method	Analytes Measured
Method 6010	Metals
Method 6020	Metals
Method 6850	Perchlorate
Method 7196	Hexavalent Chromium
Method 7470/7471 series	Mercury
Method 9020 series	Cyanide
Method 9056	Anions
Method 1668	PCB Congeners

Analysis Method	Analytes Measured
Method 8015 (MOD)	Gasoline/Diesel Range Organics GRO/DRO Residual Range Organics (RRO) Benzene, Toluene, Ethylbenzene, and Xylene (BTEX)
Method 8081	Chlorinated Pesticides
Method 8082	PCBs
Method 8141	Organophosphorous Pesticides
Method 8151	Chlorinated Herbicides
Method 8260[1]	Volatiles
Method 8270	Semi-volatiles
Method 8270 SIM	Semi-volatiles by Selected Ion Monitoring (SIM)
Method 8290	Dioxins/Furans
Method 8310	PAHs
Method 8321	Explosives by LC/MS
Method 8330	Explosives
Method 8330B[2]	Explosives
Method RSK-175	Volatiles
Method TO-15	Volatiles in Air Matrix

[1] Please specify if prep method 5035 is used, whether it was run at low-level or at mid- to high-level.

[2] Please specify if grinding was conducted in the prep for this method.

Please include LCS data for the period of **June 1, 2011** to **May 31, 2012**. If for any method in the above table you do not have at least 30 LCS samples in that timeframe, please include data going back further than the past year until at least 30 results are included, up to but not beyond 3 years, i.e., June 1, 2009 to May 31, 2012.

Data Dictionary and Format

Table 1 defines the fields and formatting for the LCS data file.

Note that while it would be most helpful to receive all of the fields listed in Table 1, there are some fields that are not required (noted in the right-hand column). If those data are not included, please be sure to still include all fields with blanks or NA where appropriate.

Data files are limited in size to 200MB or one million records for uploading to the database. If your file is larger than that, please break it into multiple files and upload them separately.

When your data file is submitted via the website, the characteristics listed in the "Data Type" column will be checked in the data verification step of the upload process. If any of the characteristics are not met, then the discrepancies will be identified and the data file will not be immediately uploaded to the database. You may choose to try to address the issues on your own, or you may contact Kelly Black (contact information above) for assistance with your data upload.

If the data file meets the data verification requirements, it will be entered into the database and will be available for use in the LCS study. Data received for this study will not be provided to the DoD or DOE in any manner that allows attribution of records to a specific laboratory, but will be used along with all other data to update and improve the LCS control limits as currently provided in Appendix G of the Quality Systems Manual for Environmental Laboratories, Version 4.2.

Table 1. Field Characteristics for the Data File

Field Name	Description	Data Type[1]	Value Required
analysis_date	The date on which the LCS sample was analyzed.	varchar (20)	yes
batch_number	An identifier for the batch with which the LCS sample was analyzed.	varchar (20)	yes
analyte_name	A name for the analyte that corresponds to the code in the cas_id field	varchar (50)	yes
cas_id	The Chemical Abstracts Service Registry Number (CAS Number) designation for the analyte	varchar (20)	yes
matrix	A description of the matrix of the sample (e.g., solids, water, air)	varchar (20)	yes
cleanup_method	An identifier for the cleanup method used for the suite of analyses.	varchar (20)	no
prep_method	An identifier for the preparation method used for the suite of analyses. Please specify the prep method option for those cases footnoted in the methods table above.	varchar (20)	yes
analytical_method	An identifier for the analytical method used for the suite of analyses.	varchar (20)	yes
spike_conc	The concentration of analyte spiked into the sample to prepare the LCS	decimal (16,6)	yes
recovery_conc	The concentration of analyte in the LCS recovered by the laboratory after analysis	decimal (16,6)	yes
conc_units	The concentration units associated with the spike_conc and recovery_conc fields	varchar (10)	yes
percent_recovery	The recovery of the analyte expressed as a percentage; equal to (recovery_conc/spike_conc) x 100	decimal (16,6)	no
lower_control_limit	The lab's lower control limit of LCS percent_recovery	decimal (16,6)	no

Field Name	Description	Data Type[1]	Value Required
upper_control_limit	The lab's upper control limit of LCS percent_recovery	decimal (16,6)	no
lod	The limit of detection for the analyte/method. (Note that this is the limit of detection, not the method detection limit.)	decimal (16,6)	no
loq	The limit of quantification for the analyte/method.	decimal (16,6)	no

[1]varchar (x): a variable-length character string, where x represents the maximum length of the string.

decimal (x,y): a numeric field with a total of x possible characters of which no more than y characters may be to the right of the decimal point.

Appendix B
LCS Control Limits

Table : 1 LCS Control Limits for SW-846 1668 Solid Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
2051-60-7	PCB 1	148	91.7	14.6	47.8	135.6
56558-16-8	PCB 104	152	99.4	6.2	80.8	117.9
32598-14-4	PCB 105	179	105.6	7.2	83.9	127.3
74472-37-0	PCB 114	177	105.4	6.2	86.8	123.9
31508-00-6	PCB 118	180	107.7	9.6	79	136.5
65510-44-3	PCB 123	188	107.2	8.8	80.9	133.5
57465-28-8	PCB 126	181	100.8	7.3	78.8	122.9
2050-68-2	PCB 15	151	106	13.9	64.2	147.9
33979-03-2	PCB 155	153	98.7	7.5	76.2	121.3
38380-08-4	PCB 156	176	104.5	6.9	83.7	125.3
52663-72-6	PCB 167	181	106.8	8.3	81.8	131.7
32774-16-6	PCB 169	181	98.8	7.3	76.9	120.8
74487-85-7	PCB 188	150	97.5	6.4	78.2	116.7
39635-31-9	PCB 189	176	102.2	5.7	85.3	119.2
38444-73-4	PCB 19	151	99.5	8.6	73.8	125.2
2136-99-4	PCB 202	150	97.1	7.1	76	118.3
74472-53-0	PCB 205	150	100	9.4	71.8	128.2
40186-72-9	PCB 206	183	97.5	7.8	74	121.1
52663-77-1	PCB 208	150	100.2	6.6	80.3	120
2051-24-3	PCB 209	181	107.6	8.4	82.5	132.6
2051-62-9	PCB 3	126	97.4	13.2	57.8	137.1
38444-90-5	PCB 37	152	104.3	14.4	61.1	147.5
13029-08-8	PCB 4	144	98	13.8	56.6	139.5
15968-05-5	PCB 54	150	95.9	9.5	67.4	124.4
32598-13-3	PCB 77	152	96.5	7	75.3	117.6
70362-50-4	PCB 81	150	100.6	7.7	77.5	123.7

Table : 2 LCS Control Limits for SW-846 1668 Water Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
2051-60-7	PCB 1	206	86.7	9.4	58.4	115
37680-73-2	PCB 101	107	103.8	9.5	75.3	132.3
56558-16-8	PCB 104	206	99.4	6.9	78.8	120
32598-14-4	PCB 105	258	104.7	9.3	76.8	132.6
74472-37-0	PCB 114	246	106.5	8.7	80.5	132.5
31508-00-6	PCB 118	212	104.9	7.7	81.9	127.9
65510-44-3	PCB 123	252	106.8	10.2	76.1	137.6
57465-28-8	PCB 126	242	98.4	6.8	78.1	118.7
38380-07-3	PCB 128	103	102.3	7.8	78.9	125.7
2050-68-2	PCB 15	211	103.5	9.8	74	133
33979-03-2	PCB 155	208	97.4	9.5	68.8	126
38380-08-4	PCB 156	248	107.6	9.9	78	137.2
52663-72-6	PCB 167	249	110.4	11	77.6	143.3
32774-16-6	PCB 169	247	96.9	8.7	70.7	123.1
35065-30-6	PCB 170	108	108	10	78.2	137.9
74487-85-7	PCB 188	207	95.7	6.5	76.4	115.1
39635-31-9	PCB 189	248	102.4	7.2	80.8	123.9
38444-73-4	PCB 19	196	98.7	6.5	79.1	118.2
2136-99-4	PCB 202	205	95.5	6.2	76.8	114.2
74472-53-0	PCB 205	208	95.5	8.8	69.2	121.8
40186-72-9	PCB 206	210	93.6	6.6	73.9	113.3
52663-77-1	PCB 208	210	98.6	6.4	79.4	117.9
2051-24-3	PCB 209	212	103.7	8	79.8	127.7
2051-62-9	PCB 3	208	93.6	9.8	64.1	123.2
38444-90-5	PCB 37	206	97	12.3	60	134
13029-08-8	PCB 4	207	95	10.9	62.4	127.6
15968-05-5	PCB 54	204	95	9.4	66.9	123.1
32598-13-3	PCB 77	208	94.1	6.2	75.4	112.8
70362-50-4	PCB 81	208	100.6	8	76.5	124.7

Table : 3 LCS Control Limits for SW-846 6010 Solid Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
7429-90-5	Aluminum	6258	96.7	7.5	74.2	119.2
7440-36-0	Antimony	5997	96.4	5.7	79.1	113.6
7440-38-2	Arsenic	9530	96.2	4.9	81.5	110.9
7440-39-3	Barium	9236	98.3	5	83.2	113.4
7440-41-7	Beryllium	6799	97.8	5.1	82.5	113.1
7440-42-8	Boron	2312	93	7.1	71.8	114.3
7440-43-9	Cadmium	9466	97.5	5.3	81.8	113.3
7440-70-2	Calcium	6347	98.1	5.8	80.7	115.5
7440-47-3	Chromium	9598	98.9	4.6	85.2	112.7
7440-48-4	Cobalt	6725	98.7	4.5	85.3	112.1
7440-50-8	Copper	7839	99.1	6	81.1	117
7439-89-6	Iron	5746	99.7	6.1	81.3	118
7439-92-1	Lead	10160	96.8	5.1	81.4	112.1
7439-93-2	Lithium	551	98.8	4.5	85.2	112.4
7439-95-4	Magnesium	6283	96.1	6.1	77.7	114.5
7439-96-5	Manganese	6732	99.1	4.9	84.4	113.9
7439-98-7	Molybdenum	4424	98.7	5.7	81.8	115.7
7440-02-0	Nickel	7412	98.1	4.9	83.3	112.8
7440-05-3	Palladium	313	72.3	22	6.2	138.3
7723-14-0	Phosphorus	189	103.1	3.8	91.8	114.4
7440-09-7	Potassium	6574	98.3	5.8	80.9	115.8
7782-49-2	Selenium	8862	94.5	5.6	77.8	111.2
7440-21-3	Silicon	1214	75.5	39.5	0	194.1
7440-22-4	Silver	9105	97.3	5	82.4	112.2
7440-23-5	Sodium	5825	100.1	5.8	82.6	117.5
7440-24-6	Strontium	2573	98.5	5	83.4	113.5
7440-28-0	Thallium	6416	96.8	4.6	83	110.6
7440-31-5	Tin	2780	100.1	6.6	80.2	120
7440-32-6	Titanium	2107	98.2	5.2	82.8	113.7
7440-33-7	Tungsten	273	41.1	43.2	0	170.8
7440-61-1	Uranium	109	97.4	5.2	81.9	113
7440-62-2	Vanadium	6934	98.3	5.4	82.2	114.4
7440-66-6	Zinc	7882	97.4	5	82.4	112.5
7440-67-7	Zirconium	239	70.4	45.6	0	207.3

Table : 4 LCS Control Limits for SW-846 6010 Water Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
7429-90-5	Aluminum	11532	100	4.8	85.5	114.5
7440-36-0	Antimony	10737	100.2	4.2	87.6	112.8
7440-38-2	Arsenic	14123	99.9	4.3	86.9	112.9
7440-39-3	Barium	14476	100.3	4.1	88	112.5
7440-41-7	Beryllium	11552	100.4	4	88.5	112.4
7440-69-9	Bismuth	147	95.8	3.2	86.1	105.4
7440-42-8	Boron	3871	98.8	4.8	84.5	113.2
7440-43-9	Cadmium	13922	100.8	4.1	88.4	113.1
7440-70-2	Calcium	11382	100	4.2	87.3	112.8
7440-47-3	Chromium	15027	101.1	3.9	89.5	112.8
7440-48-4	Cobalt	11824	101.2	4.2	88.7	113.7
7440-50-8	Copper	12910	100.2	4.6	86.3	114.1
7439-89-6	Iron	13797	100.7	4.7	86.6	114.8
7439-92-1	Lead	14391	99.3	4.4	86.1	112.6
7439-93-2	Lithium	938	100.7	5.3	84.8	116.7
7439-95-4	Magnesium	11423	98.8	4.8	84.6	113.1
7439-96-5	Manganese	12767	101.9	4.1	89.7	114.1
7439-98-7	Molybdenum	8251	101.1	4	89.1	113
7440-02-0	Nickel	12699	100.5	4.1	88.3	112.8
7440-05-3	Palladium	492	99.8	4	87.8	111.8
7723-14-0	Phosphorus	203	100.5	4.2	87.7	113.2
7440-09-7	Potassium	11006	99.9	4.7	85.7	114.1
7782-49-2	Selenium	13264	98.5	5.2	83	114.1
7440-21-3	Silicon	1525	100.6	6.1	82.3	118.9
7440-22-4	Silver	13770	99.1	5.1	83.7	114.5
7440-23-5	Sodium	10893	100.9	4.7	86.7	115.1
7440-24-6	Strontium	3782	101.3	3.8	89.8	112.7
7704-34-9	Sulfur	145	100.7	3.9	89	112.4
7440-28-0	Thallium	10063	99.5	4.7	85.4	113.5
7440-31-5	Tin	4502	101.3	4.4	88	114.5
7440-32-6	Titanium	5625	101.1	3.4	90.7	111.4
7440-33-7	Tungsten	400	45.1	46.3	0	183.9
7440-61-1	Uranium	223	101.3	5.8	84	118.5
7440-62-2	Vanadium	12032	100.2	3.6	89.5	111
7440-66-6	Zinc	13549	100.6	4.6	86.7	114.5
7440-67-7	Zirconium	217	60.1	52.9	0	218.7

Table : 5 LCS Control Limits for SW-846 6020 Solid Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
7429-90-5	Aluminum	919	101	7.7	77.9	124.1
7440-36-0	Antimony	1911	98.2	8.7	72	124.3
7440-38-2	Arsenic	3686	99.8	6	81.9	117.6
7440-39-3	Barium	2598	100.6	5	85.7	115.6
7440-41-7	Beryllium	2457	100.3	6.6	80.4	120.3
7440-42-8	Boron	581	101.1	9	73.9	128.2
7440-43-9	Cadmium	2893	99.6	5.4	83.5	115.6
7440-70-2	Calcium	835	102.2	5.4	85.9	118.4
7440-47-3	Chromium	2420	100.8	6	82.6	118.9
7440-48-4	Cobalt	2005	99.7	5.1	84.4	115
7440-50-8	Copper	2548	101.3	5.8	83.9	118.8
7439-89-6	Iron	1131	102.7	7.1	81.4	123.9
7439-92-1	Lead	3228	101	5.7	84	118
7439-93-2	Lithium	162	97.8	7.5	75.2	120.4
7439-95-4	Magnesium	868	101.6	7.1	80.4	122.9
7439-96-5	Manganese	1830	100.3	5.1	85	115.6
7439-97-6	Mercury	226	99.9	8.8	73.5	126.4
7439-98-7	Molybdenum	1188	98.1	5.1	82.7	113.5
7440-02-0	Nickel	2617	101.4	5.8	84	118.7
7440-09-7	Potassium	803	102.3	5.7	85.2	119.4
7782-49-2	Selenium	3104	99.2	6.6	79.5	118.9
7440-22-4	Silver	2488	100.1	5.9	82.5	117.8
7440-23-5	Sodium	818	102.2	7.7	79.2	125.2
7440-24-6	Strontium	676	101.7	8.9	74.9	128.5
7440-28-0	Thallium	2589	100.1	5.9	82.5	117.7
7440-29-1	Thorium	341	98.4	5.7	81.2	115.6
7440-31-5	Tin	886	101.3	6.6	81.7	121
7440-32-6	Titanium	512	100.2	5.7	83	117.4
7440-61-1	Uranium	833	101.1	6.1	82.6	119.5
7440-62-2	Vanadium	1677	99.1	5.7	81.9	116.3
7440-66-6	Zinc	2352	100.1	6.2	81.5	118.7

Table : 6 LCS Control Limits for SW-846 6020 Water Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
7429-90-5	Aluminum	3145	100.6	5.4	84.4	116.7
7440-36-0	Antimony	5172	100.9	5.3	85.1	116.7
7440-38-2	Arsenic	6404	100.1	5.3	84.1	116
7440-39-3	Barium	4452	99.9	4.8	85.5	114.3
7440-41-7	Beryllium	4297	102	6.3	83.2	120.9
7440-42-8	Boron	1460	101.5	9.6	72.8	130.3
7440-43-9	Cadmium	5699	100.8	4.7	86.7	115
7440-70-2	Calcium	2085	102.3	5.2	86.6	118.1
7440-47-3	Chromium	5569	100.6	5.1	85.4	115.7
7440-48-4	Cobalt	3885	100.7	4.7	86.4	114.9
7440-50-8	Copper	5092	101.4	5.4	85.1	117.7
7439-89-6	Iron	3135	102.4	5.2	86.9	117.9
7439-92-1	Lead	6868	101.7	4.5	88.1	115.2
7439-93-2	Lithium	461	102.3	8	78.4	126.3
7439-95-4	Magnesium	2399	100.4	5.9	82.8	117.9
7439-96-5	Manganese	4330	101.1	4.7	87.1	115.1
7439-97-6	Mercury	328	97.2	9	70.2	124.2
7439-98-7	Molybdenum	2908	99.3	5.4	83.2	115.4
7440-02-0	Nickel	5095	100.8	5.3	84.9	116.7
7440-09-7	Potassium	2154	101.2	4.7	87	115.4
7782-49-2	Selenium	5797	100.1	6.7	80.1	120.2
7440-22-4	Silver	4956	100.8	5.1	85.4	116.1
7440-23-5	Sodium	2313	100.7	5.3	84.8	116.6
7440-24-6	Strontium	1170	99.9	5.9	82.3	117.5
7440-28-0	Thallium	5352	99.3	5.6	82.4	116.2
7440-29-1	Thorium	313	103.7	5.7	86.6	120.8
7440-31-5	Tin	1509	100.6	4.8	86.2	114.9
7440-32-6	Titanium	1538	98.6	5.3	82.6	114.6
7440-33-7	Tungsten	130	103.5	6.2	85	122
7440-61-1	Uranium	1860	103.3	5.4	87.1	119.5
7440-62-2	Vanadium	3375	100.5	5	85.5	115.4
7440-66-6	Zinc	4253	101	6	83.1	118.9

Table : 7 LCS Control Limits for SW-846 6850 Solid Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
14797-73-0	Perchlorate	575	102.5	6.1	84.1	120.9

Table : 8 LCS Control Limits for SW-846 6850 Water Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
14797-73-0	Perchlorate	790	101.6	5.8	84.3	118.8

Table : 9 LCS Control Limits for SW-846 7196 Solid Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
18540-29-9	Hexavalent Chromium [Cr (VI)]	2688	96.7	4.3	83.9	109.5

Table : 10 LCS Control Limits for SW-846 7196 Water Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
18540-29-9	Hexavalent Chromium [Cr (VI)]	1576	100.5	3.6	89.7	111.3

Table : 11 LCS Control Limits for SW-846 7471 Solid Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
7439-97-6	Mercury	6471	102	7.5	79.5	124.4

Table : 12 LCS Control Limits for SW-846 7470 Water Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
7439-97-6	Mercury	10530	100.5	6.3	81.7	119.3

Table : 13 LCS Control Limits for SW-846 8015(mod) Solid Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
460-00-4	4-Bromofluorobenzene	1263	100.7	11.1	67.3	134.1
303-04	Diesel Range Organics (DRO)	2184	85.2	15.7	38	132.4
307-27	Gasoline Range Organics (GRO)	1134	100.3	7.2	78.7	122
307-51	Motor Oil	658	72.2	11.2	38.7	105.8
84-15-1	o-Terphenyl	314	87.4	14.1	45.2	129.6

Table : 14 LCS Control Limits for SW-846 8015(mod) Water Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
460-00-4	4-Bromofluorobenzene	756	101	10.8	68.5	133.4
303-04	Diesel Range Organics (DRO)	1757	83.7	16	35.6	131.8
307-27	Gasoline Range Organics (GRO)	971	99.9	7.3	78	121.8
307-51	Motor Oil	573	76.9	12.1	40.7	113.2
84-15-1	o-Terphenyl	299	90.5	11.4	56.2	124.7
630-02-4	Octacosane	130	101.1	13.8	59.8	142.4

Table : 15 LCS Control Limits for SW-846 8081 Solid Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
789-02-6	2,4'-DDT	110	100.1	11.9	64.4	135.8
53-19-0	2,4'-DDD	111	102.8	9.2	75.2	130.3
3424-82-6	2,4'-DDE	111	102.2	9.5	73.7	130.7
72-54-8	4,4'-DDD	2995	97.7	13.9	56	139.4
72-55-9	4,4'-DDE	2938	95.3	13	56.3	134.3
50-29-3	4,4'-DDT	2470	95.8	15.1	50.3	141.2
309-00-2	Aldrin	2985	90.5	15.2	45	136
319-84-6	alpha-BHC	3021	90.9	15.3	44.9	136.9
5103-71-9	alpha-Chlordane	2681	93.7	13.2	54.1	133.3
319-85-7	beta-BHC	2989	93.1	14.3	50.2	136.1
57-74-9	Chlordane	229	95.7	17.7	42.7	148.8
319-86-8	delta-BHC	2943	93.3	15.3	47.3	139.3
60-57-1	Dieldrin	2987	95.7	13.4	55.7	135.8
959-98-8	Endosulfan I	984	92.2	13.2	52.5	131.9
33213-65-9	Endosulfan II	2913	93.1	13.5	52.6	133.5
1031-07-8	Endosulfan sulfate	2954	95.9	13.5	55.4	136.4
72-20-8	Endrin	3076	98.1	13.9	56.5	139.8
7421-93-4	Endrin aldehyde	3004	86	17	34.9	137.1
53494-70-5	Endrin Ketone	2953	95.5	13.5	55	136.1
58-89-9	gamma-BHC [Lindane]	3153	92.1	14.4	48.8	135.3
5103-74-2	gamma-Chlordane	2749	94.3	13.7	53.2	135.4
76-44-8	Heptachlor	3144	91.6	14.9	47	136.2
1024-57-3	Heptachlor epoxide	3093	93.9	13.9	52.1	135.6
118-74-1	Hexachlorobenzene	319	91.6	11.4	57.3	125.9
72-43-5	Methoxychlor	3021	97.6	15.2	51.9	143.2
2385-85-5	Mirex	303	96.4	10.6	64.7	128.2
877-09-8	Tetrachloro-m-xylene	1482	85.3	14.6	41.5	129.1
8001-35-2	Toxaphene	532	86.7	17.9	32.9	140.5

Table : 16 LCS Control Limits for SW-846 8081 Water Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
72-54-8	4,4'-DDD	3112	99.6	14.4	56.4	142.9
72-55-9	4,4'-DDE	3062	96	12.9	57.2	134.7
50-29-3	4,4'-DDT	2681	97	15.3	51	143
309-00-2	Aldrin	3021	89.5	14.7	45.4	133.5
319-84-6	alpha-BHC	3070	95.8	13.9	54.1	137.6
5103-71-9	alpha-Chlordane	2736	94.3	11.6	59.7	129
319-85-7	beta-BHC	3068	96.3	13.3	56.4	136.2
57-74-9	Chlordane	150	101.2	13	62.2	140.3
319-86-8	delta-BHC	3035	97.2	15	52.1	142.3
60-57-1	Dieldrin	3078	98	12.6	60.3	135.7
959-98-8	Endosulfan I	968	93.8	10.7	61.6	126.1
33213-65-9	Endosulfan II	3047	93.4	13.7	52.3	134.6
1031-07-8	Endosulfan sulfate	3013	97.2	11.9	61.6	132.8
72-20-8	Endrin	3635	98.7	13	59.7	137.7
7421-93-4	Endrin aldehyde	3018	91.1	13.5	50.7	131.5
53494-70-5	Endrin Ketone	2908	95.9	12.6	58.2	133.5
58-89-9	gamma-BHC [Lindane]	3693	96.4	12.5	58.7	134
5103-74-2	gamma-Chlordane	3008	95.8	13.2	56.1	135.5
76-44-8	Heptachlor	3597	91.9	12.8	53.6	130.2
1024-57-3	Heptachlor epoxide	3574	96.9	12.1	60.6	133.1
118-74-1	Hexachlorobenzene	134	82.1	18.1	27.8	136.5
72-43-5	Methoxychlor	3569	99	15.2	53.5	144.5
2385-85-5	Mirex	340	88.8	12.6	51.1	126.6
877-09-8	Tetrachloro-m-xylene	1510	84.1	13.3	44.2	124
8001-35-2	Toxaphene	421	83.9	16.8	33.3	134.4

Table : 17 LCS Control Limits for SW-846 8082 Solid Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
12674-11-2	Aroclor 1016	6847	90.1	14.5	46.7	133.6
11097-69-1	Aroclor 1254	406	101.2	11.4	67	135.3
11096-82-5	Aroclor 1260	7975	96.6	14.4	53.3	139.8
877-09-8	Tetrachloro-m-xylene	2379	86.7	14.4	43.5	130

Table : 18 LCS Control Limits for SW-846 8082 Water Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
12674-11-2	Aroclor 1016	3356	87.1	13.8	45.6	128.6
11097-69-1	Aroclor 1254	184	80.1	15.4	33.8	126.5
11096-82-5	Aroclor 1260	3538	89.4	14.8	44.9	133.9
877-09-8	Tetrachloro-m-xylene	1523	73.2	20	13.1	133.4

Table : 19 LCS Control Limits for SW-846 8141 Solid Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
86-50-0	Azinphos-methyl	325	96.7	19.6	37.8	155.6
35400-43-2	Bolstar [Sulprofos]	270	93.5	15.1	48.1	138.9
786-19-6	Carbophenothion	237	96.6	12.5	59.2	134
2921-88-2	Chlorpyrifos	333	93.3	15.5	46.9	139.6
56-72-4	Coumaphos	321	98.4	20.5	37	159.7
8065-48-3	Demeton	254	80.2	12.4	43.2	117.3
333-41-5	Diazinon	328	87.9	15.2	42.3	133.6
62-73-7	Dichlorvos [DDVP]	322	90.6	17.2	39.1	142.1
60-51-5	Dimethoate	264	77.5	20.6	15.8	139.1
298-04-4	Disulfoton	332	86	19.5	27.5	144.5
2104-64-5	EPN	300	90.6	15.5	44.1	137.1
563-12-2	Ethion	160	99.3	13.5	58.9	139.8
13194-48-4	Ethoprop	325	87.8	13.5	47.4	128.2
52-85-7	Fampphur	192	90.6	14.6	46.9	134.2
115-90-2	Fensulfothion	324	87.1	20	26.9	147.2
55-38-9	Fenthion	325	88.7	14.9	43.9	133.5
121-75-5	Malathion	322	91.2	15.2	45.6	136.8
150-50-5	Merphos	310	74.2	26.2	0	152.8
298-00-0	Methyl parathion	330	93.6	14.8	49.1	138
7786-34-7	Mevinphos	316	94.3	27.4	12.2	176.4
300-76-5	Naled	308	54.8	39.7	0	174.1
126-68-1	O,O,O-Triethyl phosphorothioate	186	79.8	13.3	40	119.6
56-38-2	Parathion	313	94.3	14.9	49.5	139.2
298-02-2	Phorate	330	82.6	19.8	23.2	142
299-84-3	Ronnel	328	91.6	15.5	45	138.1
122-34-9	Simazine	120	93	16.3	44.2	141.8
22248-79-9	Stirophos [Tetrachlorovinphos, Gardona]	153	91.2	16.3	42.4	140
961-11-5	Tetrachlorvinphos (stirophos)	162	91.6	12.5	54.1	129.1
3689-24-5	Tetraethyl dithiopyrophosphate [Sulfotep]	238	89	12.2	52.4	125.5
297-97-2	Thionazine	192	83.5	13.3	43.6	123.5
34643-46-4	Tokuthion [Protothiofos]	320	90.7	15.1	45.2	136.1
327-98-0	Trichloronate	326	88.3	17.2	36.7	139.9

Table : 20 LCS Control Limits for SW-846 8141 Water Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
1912-24-9	Atrazine	262	82.1	12.5	44.7	119.6
86-50-0	Azinphos-methyl	689	88.9	15.4	42.7	135
35400-43-2	Bolstar [Sulprofos]	561	91.2	14.6	47.4	135
786-19-6	Carbophenothion	418	94.4	14.1	52	136.7
2921-88-2	Chlorpyrifos	644	90	14.2	47.4	132.5
56-72-4	Coumaphos	684	89.9	15.1	44.5	135.3
8065-48-3	Demeton	591	76.2	17.1	24.8	127.5
298-03-3	Demeton-O	132	64.2	20.3	3.4	125.1
126-75-0	Demeton-S	134	91.4	23.6	20.5	162.3
333-41-5	Diazinon	684	86	14.4	42.9	129.2
62-73-7	Dichlorvos [DDVP]	682	88.3	16.4	39	137.6
60-51-5	Dimethoate	597	75.2	16.5	25.7	124.6
298-04-4	Disulfoton	753	85.1	16.3	36.2	134
2104-64-5	EPN	623	90	14.3	47.2	132.8
563-12-2	Ethion	345	93.3	17.1	42.1	144.6
13194-48-4	Ethoprop	620	88.8	12.2	52.2	125.3
52-85-7	Fampphur	315	82.8	22.9	14.1	151.5
115-90-2	Fensulfothion	659	78.1	20.9	15.3	140.9
55-38-9	Fenthion	712	89.7	15.8	42.2	137.3
121-75-5	Malathion	635	87.8	14.6	44.1	131.6
150-50-5	Merphos	704	79.6	17.8	26.3	133
298-00-0	Methyl parathion	795	91.9	14.2	49.4	134.4
7786-34-7	Mevinphos	719	91.9	34.8	0	196.2
6923-22-4	Monocrotophos	136	54.7	34.9	0	159.3
300-76-5	Naled	670	69.1	25.7	0	146.2
126-68-1	O,O,O-Triethyl phosphorothioate	295	94.2	17.5	41.6	146.8
56-38-2	Parathion	713	92.9	13.7	51.8	134
298-02-2	Phorate	675	79.8	19	22.7	136.8
139-40-2	Propazine [Milogard]	241	86.7	11.8	51.4	121.9
299-84-3	Ronnel	740	87.1	15.1	41.6	132.5
122-34-9	Simazine	334	89.7	29.3	1.7	177.6
22248-79-9	Stirophos [Tetrachlorovinphos, Gardona]	310	94.8	15.8	47.5	142.2
961-11-5	Tetrachlorvinphos (stirophos)	418	83.5	13.8	42.1	125
3689-24-5	Tetraethyl dithiopyrophosphate [Sulfotep]	584	86.5	13.1	47.1	125.9
107-49-3	Tetraethyl pyrophosphate [TEPP]	242	81.2	42.3	0	208
297-97-2	Thionazine	366	85.1	13.4	45	125.3
34643-46-4	Tokuthion [Protothiofos]	696	87.8	14.8	43.4	132.2
327-98-0	Trichloronate	556	82.8	18.2	28.2	137.4

Table : 21 LCS Control Limits for SW-846 8151 Solid Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
93-76-5	2,4,5-T	1106	84.6	17.7	31.4	137.8
93-72-1	2,4,5-TP [Silvex]	1179	86.1	14.3	43.3	128.9
94-75-7	2,4-D	1256	86	19.3	28.1	144
94-82-6	2,4-DB	1030	88.2	17.9	34.4	142.1
19719-28-9	2,4-Dichlorophenylacetic Acid	1041	74	15.9	26.5	121.6
100-02-7	4-Nitrophenol	208	76.7	20	16.7	136.7
50594-66-6	Acifluorfen	206	79.8	18	25.8	133.9
25057-89-0	Bentazon	117	69.8	19.7	10.6	128.9
1861-32-1	Dacthal (DCPA)	147	72.5	15.6	25.8	119.1
75-99-0	Dalapon	1017	61.9	21	0	125
1918-00-9	Dicamba	1070	85.2	15.7	38.2	132.2
120-36-5	Dichloroprop	1033	91.4	21	28.3	154.5
88-85-7	Dinoseb	984	52.3	36.5	0	161.8
94-74-6	MCPA	935	81.5	17.8	28	135
93-65-2	MCPP	807	88.7	18	34.6	142.8
87-86-5	Pentachlorophenol	645	78.6	21.5	13.9	143.2
1918-02-1	Picloram	238	74.6	20	14.6	134.5

Table : 22 LCS Control Limits for SW-846 8151 Water Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
93-76-5	2,4,5-T	1758	94.8	17.5	42.4	147.3
93-72-1	2,4,5-TP [Silvex]	2289	92.9	13.8	51.4	134.4
94-75-7	2,4-D	2396	98.4	17.7	45.4	151.5
94-82-6	2,4-DB	1427	94.1	19.7	35.1	153.1
19719-28-9	2,4-Dichlorophenylacetic Acid	905	85	17.7	31.8	138.1
100-02-7	4-Nitrophenol	245	89.8	17.4	37.6	142
50594-66-6	Acifluorfen	262	95.5	16.2	46.8	144.3
25057-89-0	Bentazon	129	79	22.5	11.4	146.7
133-90-4	Chloramben	230	79.5	18.5	24	135
1861-32-1	Dacthal (DCPA)	160	76.2	13.6	35.5	117
75-99-0	Dalapon	1220	79	20	18.9	139.1
1918-00-9	Dicamba	1434	95.3	15.2	49.9	140.8
120-36-5	Dichloroprop	1404	102	18.8	45.5	158.5
88-85-7	Dinoseb	1555	74.4	20	14.4	134.4
94-74-6	MCPA	1284	89.2	18.2	34.5	143.9
93-65-2	MCPP	1137	95.2	20.7	33	157.3
7085-19-0	Mecoprop	126	97.4	21.2	33.8	161
87-86-5	Pentachlorophenol	1149	97.5	13.8	56	138.9
1918-02-1	Picloram	404	69.5	22.3	2.7	136.4

Table : 23 LCS Control Limits for SW-846 8260 Solid Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
630-20-6	1,1,1,2-Tetrachloroethane	11115	101.1	7.8	77.7	124.5
71-55-6	1,1,1-Trichloroethane	12156	101.6	9.4	73.4	129.7
79-34-5	1,1,2,2-Tetrachloroethane	11670	97	8.9	70.2	123.8
79-00-5	1,1,2-Trichloroethane	11772	99.7	7.2	78.1	121.3
76-13-1	1,1,2-Trifluoro-1,2,2-trichloroethane [Freon-113]	9760	100.8	11.7	65.7	136
75-34-3	1,1-Dichloroethane	11856	100.4	8.1	76.2	124.5
75-35-4	1,1-Dichloroethene	12352	100.3	10.1	70	130.6
563-58-6	1,1-Dichloropropene	10793	100.5	8.3	75.7	125.2
87-61-6	1,2,3-Trichlorobenzene	10572	97.8	10.6	66	129.6
96-18-4	1,2,3-Trichloropropane	10925	99.1	8.8	72.8	125.4
526-73-8	1,2,3-Trimethylbenzene	1948	99.8	6	81.7	117.9
120-82-1	1,2,4-Trichlorobenzene	10980	98	10.4	66.7	129.4
95-63-6	1,2,4-Trimethylbenzene	11085	98.7	7.9	74.9	122.5
96-12-8	1,2-Dibromo-3-chloropropane	11380	96.6	11.7	61.4	131.7
106-93-4	1,2-Dibromoethane	11408	100.1	7.3	78.1	122.1
95-50-1	1,2-Dichlorobenzene	11785	99.1	7.2	77.6	120.6
107-06-2	1,2-Dichloroethane	12328	100.5	9.2	73	128
17060-07-0	1,2-Dichloroethane-d4	5951	103.1	10.8	70.6	135.5
540-59-0	1,2-Dichloroethene	7748	99.9	7.3	78.1	121.7
78-87-5	1,2-Dichloropropane	12145	99.5	7.8	76.2	122.9
354-23-4	1,2-Dichlorotrifluoroethane [Freon 123a]	1269	97.8	11.3	63.8	131.7
108-70-3	1,3,5-Trichlorobenzene	4723	99.4	9.6	70.6	128.1
108-67-8	1,3,5-Trimethylbenzene	11080	98.4	8.4	73.3	123.6
541-73-1	1,3-Dichlorobenzene	11619	98.9	7.4	76.6	121.2
142-28-9	1,3-Dichloropropane	10713	99.1	7.3	77.3	121
542-75-6	1,3-Dichloropropene	3714	101.6	8.1	77.2	125.9
106-46-7	1,4-Dichlorobenzene	11848	97.5	7.6	74.7	120.3
105-05-5	1,4-Diethylbenzene	1896	96.6	5.9	79.1	114.2
123-91-1	1,4-Dioxane	7698	96.4	13.7	55.2	137.5
544-10-5	1-Chlorohexane	2543	100.4	9.8	70.9	129.9
594-20-7	2,2-Dichloropropane	10703	99.7	11.1	66.5	132.9
78-93-3	2-Butanone [MEK]	11514	99.6	16.3	50.8	148.4
126-99-8	2-Chloro-1,3-butadiene	6667	99	11.3	65	132.9
110-75-8	2-Chloroethyl vinyl ether	6957	96.1	17.6	43.3	148.9
95-49-8	2-Chlorotoluene	10838	98.5	7.9	74.8	122.3
591-78-6	2-Hexanone	11004	99.1	15.4	52.9	145.3
91-57-6	2-Methylnaphthalene	2687	78.5	21.5	14.1	142.9
79-46-9	2-Nitropropane	4969	98.3	17.1	47	149.7
67-63-0	2-Propanol [Isopropyl alcohol]	1696	99.8	13.4	59.6	140
460-00-4	4-Bromofluorobenzene	6267	98.9	6.8	78.5	119.3
106-43-4	4-Chlorotoluene	10785	98.3	8.6	72.4	124.2
108-10-1	4-Methyl-2-pentanone [MIBK]	11364	99.6	11.6	64.7	134.5
67-64-1	Acetone	11089	99.6	21.4	35.6	163.7
75-05-8	Acetonitrile	5697	98.5	14.8	54	143.1
107-02-8	Acrolein [Propenal]	7528	101.1	18	47.1	155.1
107-13-1	Acrylonitrile	8293	99.7	11.4	65.4	134.1
107-05-1	Allyl chloride	6908	101.1	11.2	67.7	134.6

71-43-2	Benzene	12853	99.2	7.4	77	121.4
100-44-7	Benzyl chloride	2743	92.1	9.4	63.9	120.3
108-86-1	Bromobenzene	10974	99.3	7.3	77.5	121.1
74-97-5	Bromochloromethane	11023	101.4	7.8	78.1	124.7
75-27-4	Bromodichloromethane	11850	101	8.5	75.4	126.7
75-25-2	Bromoform	11890	99.1	10.8	66.7	131.5
74-83-9	Bromomethane	11416	98.3	15	53.3	143.2
75-15-0	Carbon disulfide	11132	97.9	11.5	63.4	132.4
56-23-5	Carbon tetrachloride	12090	102.3	10.7	70.2	134.5
108-90-7	Chlorobenzene	12382	99.7	6.9	79	120.3
124-48-1	Chlorodibromomethane	11852	100.2	8.7	74	126.4
75-00-3	Chloroethane	11444	98.8	13.3	58.9	138.6
67-66-3	Chloroform	12344	100.3	7.6	77.5	123
74-87-3	Chloromethane	11876	93.3	14.3	50.4	136.2
156-59-2	cis-1,2-Dichloroethene	11645	99.9	7.6	77.1	122.6
10061-01-5	cis-1,3-Dichloropropene	11805	99.8	8.7	73.8	125.9
1476-11-5	cis-1,4-Dichloro-2-butene	977	106	12.4	68.7	143.3
110-82-7	Cyclohexane	8827	98.9	10.6	67.1	130.8
108-94-1	Cyclohexanone	3764	93.2	20.9	30.4	156.1
1868-53-7	Dibromofluoromethane	2142	98.1	6.8	77.6	118.7
74-95-3	Dibromomethane	10913	101.1	7.9	77.6	124.7
75-71-8	Dichlorodifluoromethane [Freon-12]	11467	88.9	20.1	28.8	149.1
75-43-4	Dichlorofluoromethane	717	100.8	18	46.8	154.9
60-29-7	Diethyl ether	6283	99.6	9.6	70.8	128.5
108-20-3	Diisopropyl ether	8542	98.3	9.7	69.1	127.4
64-17-5	Ethanol	3958	102.2	18.9	45.4	159
141-78-6	Ethyl acetate	4516	95.4	14.5	51.9	138.8
97-63-2	Ethyl methacrylate	7075	98.9	9.9	69.3	128.5
637-92-3	Ethyl tert-butyl ether	7514	98.9	9.1	71.7	126.1
100-41-4	Ethylbenzene	12427	99.1	7.7	76.1	122.2
462-06-6	Fluorobenzene	689	97.3	5.4	81	113.6
142-82-5	Heptane	5420	93.4	14.9	48.6	138.2
87-68-3	Hexachlorobutadiene	10264	98.1	12.4	61	135.3
67-72-1	Hexachloroethane	3265	102.5	10.1	72.1	132.9
110-54-3	Hexane	7116	93.6	16.1	45.4	141.8
74-88-4	Iodomethane	9457	100.9	10.1	70.6	131.3
78-83-1	Isobutyl alcohol	6162	97.5	12.6	59.6	135.4
108-21-4	Isopropyl acetate [Acetic acid]	2885	94.2	12.2	57.6	130.9
98-82-8	Isopropylbenzene	11596	100.8	11.1	67.7	134
179601-23-1	m,p-Xylene [3,4-Xylene]	10612	100.4	7.7	77.2	123.7
126-98-7	Methacrylonitrile	6736	99.2	11.1	66	132.4
79-20-9	Methyl acetate	8320	98.7	15.2	53.1	144.3
80-62-6	Methyl methacrylate	7050	98.4	11.9	62.7	134.1
1634-04-4	Methyl tert-butyl ether [MTBE]	11253	98.9	8.7	73	124.9
108-87-2	Methylcyclohexane	8565	99.4	11.2	66	132.9
75-09-2	Methylene chloride	12024	98.9	9.7	69.9	127.9
123-86-4	n-Butyl acetate	2981	95.1	11	62	128.2
71-36-3	n-Butyl alcohol	4800	92.9	12.6	55.2	130.6

104-51-8	n-Butylbenzene	10921	98.7	9.7	69.7	127.7
103-65-1	n-Propylbenzene	10947	98.9	8.8	72.5	125.3
91-20-3	Naphthalene	10602	95.6	11.2	62.1	129.1
95-47-6	o-Xylene	11940	100	7.7	76.9	123.2
99-87-6	p-Isopropyltoluene [p-Cymene]	10953	100.3	9	73.4	127.2
76-01-7	Pentachloroethane	5957	102	11.1	68.8	135.3
107-12-0	Propionitrile [Ethyl cyanide]	6734	101	11.1	67.6	134.3
135-98-8	sec-Butylbenzene	10960	99	8.8	72.5	125.5
100-42-5	Styrene	11809	100.2	8	76.1	124.2
994-05-8	tert-Amyl methyl ether [TAME]	7153	99.8	8.9	73.1	126.4
75-65-0	tert-Butyl alcohol	7492	100.5	10.7	68.3	132.7
98-06-6	tert-Butylbenzene	10974	98.8	8.6	73	124.5
127-18-4	Tetrachloroethene	12091	100.5	9.2	72.7	128.2
109-99-9	Tetrahydrofuran	8039	98	12.4	60.7	135.3
108-88-3	Toluene	12499	99.3	7.3	77.4	121.3
2037-26-5	Toluene-d8	6232	100.7	5.2	85.1	116.4
156-60-5	trans-1,2-Dichloroethene	11849	99.2	8.6	73.5	124.9
10061-02-6	trans-1,3-Dichloropropene	11805	100.9	9.8	71.3	130.4
110-57-6	trans-1,4-Dichloro-2-butene	8307	98.6	12.3	61.6	135.6
79-01-6	Trichloroethene	12440	100.2	7.6	77.4	123
75-69-4	Trichlorofluoromethane [Freon-11]	11530	101	13.1	61.6	140.4
108-05-4	Vinyl acetate	7260	100.3	16.9	49.5	151.1
75-01-4	Vinyl chloride	12129	95.6	13.2	56	135.2
1330-20-7	Xylenes [total]	8623	100.7	7.7	77.5	123.8
1330-20-7	Xylenes [total]	8623	100.7	7.7	77.5	123.8

Table : 24 LCS Control Limits for SW-846 8260 Water Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
630-20-6	1,1,1,2-Tetrachloroethane	24511	101.1	7.6	78.3	124
71-55-6	1,1,1-Trichloroethane	28223	102.7	9.6	74	131.4
79-34-5	1,1,2,2-Tetrachloroethane	27450	96.4	8.3	71.4	121.4
79-00-5	1,1,2-Trichloroethane	27338	99.5	6.5	79.8	119.1
76-13-1	1,1,2-Trifluoro-1,2,2-trichloroethane [Freon-113]	21122	103	11.1	69.8	136.3
75-34-3	1,1-Dichloroethane	28154	101.3	8	77.2	125.4
75-35-4	1,1-Dichloroethene	29436	101	10	71	131
563-58-6	1,1-Dichloropropene	23631	102	7.8	78.7	125.2
87-61-6	1,2,3-Trichlorobenzene	24271	98.7	10.1	68.5	129
96-18-4	1,2,3-Trichloropropane	24525	97.5	8	73.4	121.6
526-73-8	1,2,3-Trimethylbenzene	2965	100.9	6.2	82.2	119.6
120-82-1	1,2,4-Trichlorobenzene	25290	99.8	10.1	69.4	130.2
95-63-6	1,2,4-Trimethylbenzene	27917	99.6	8	75.7	123.5
96-12-8	1,2-Dibromo-3-chloropropane	24955	94.9	11.1	61.6	128.1
106-93-4	1,2-Dibromoethane	29096	99	7.2	77.3	120.7
95-50-1	1,2-Dichlorobenzene	27583	99.4	6.5	79.8	118.9
107-06-2	1,2-Dichloroethane	32965	100.3	9.2	72.6	128
17060-07-0	1,2-Dichloroethane-d4	8673	99.5	6.1	81.1	117.9
540-59-0	1,2-Dichloroethene	18667	100.2	7.1	78.9	121.4
78-87-5	1,2-Dichloropropane	27787	100.1	7.2	78.4	121.8
354-23-4	1,2-Dichlorotrifluoroethane [Freon 123a]	3144	103.1	10.9	70.4	135.9
108-70-3	1,3,5-Trichlorobenzene	10037	102.1	9.2	74.5	129.7
108-67-8	1,3,5-Trimethylbenzene	27820	99.5	8.1	75.3	123.8
106-99-0	1,3-Butadiene	1202	100.6	19.2	43.1	158.1
541-73-1	1,3-Dichlorobenzene	26951	99.7	6.5	80.1	119.2
142-28-9	1,3-Dichloropropane	23811	99.1	6.5	79.6	118.6
542-75-6	1,3-Dichloropropene	9784	99.9	7.6	77.2	122.6
106-46-7	1,4-Dichlorobenzene	27715	98.3	6.5	78.8	117.9
105-05-5	1,4-Diethylbenzene	1980	98.4	6.4	79.3	117.5
123-91-1	1,4-Dioxane	17866	99	13.4	58.7	139.2
544-10-5	1-Chlorohexane	5790	99.6	8	75.5	123.7
540-84-1	2,2,4-Trimethylpentane [Isooctane]	5432	95.2	12.3	58.4	132
594-20-7	2,2-Dichloropropane	23775	99.7	13.2	60.2	139.1
75-85-4	2-Butanol	4332	92.7	9.1	65.5	120
78-93-3	2-Butanone [MEK]	26659	99.6	14.6	55.8	143.4
126-99-8	2-Chloro-1,3-butadiene	15673	100	11.7	65	135.1
110-75-8	2-Chloroethyl vinyl ether	18225	94.7	14.7	50.6	138.9
95-49-8	2-Chlorotoluene	23750	100	7.2	78.5	121.5
591-78-6	2-Hexanone	25368	97.9	13.5	57.3	138.5
91-57-6	2-Methylnaphthalene	3754	79.4	20.9	16.7	142.2
79-46-9	2-Nitropropane	10213	92.6	14.5	49.2	136
67-63-0	2-Propanol [Isopropyl alcohol]	2034	98.8	14.4	55.7	141.9
624-95-3	3,3-Dimethyl-1-butanol	6491	90.9	13.9	49.3	132.5
460-00-4	4-Bromofluorobenzene	9971	99.7	4.9	85.1	114.2
106-43-4	4-Chlorotoluene	23616	99.9	7.4	77.5	122.2
108-10-1	4-Methyl-2-pentanone [MIBK]	25796	98.5	10.6	66.9	130.2
67-64-1	Acetone	25006	99.5	20.1	39.2	159.8

Table : 24 LCS Control Limits for SW-846 8260 Water Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
75-05-8	Acetonitrile	13308	95.8	15.2	50.2	141.5
107-02-8	Acrolein [Propenal]	16380	96.8	19.3	39	154.6
107-13-1	Acrylonitrile	20173	99	11.9	63.2	134.7
107-05-1	Allyl chloride	15758	99	10.4	67.6	130.3
71-43-2	Benzene	34376	99.4	6.9	78.6	120.1
100-44-7	Benzyl chloride	10675	90.1	15.9	42.4	137.8
108-86-1	Bromobenzene	23762	99.7	6.7	79.6	119.8
74-97-5	Bromochloromethane	24356	100.8	7.5	78.3	123.2
75-27-4	Bromodichloromethane	26888	101.8	7.8	78.5	125.2
75-25-2	Bromoform	27675	97.8	10.8	65.6	130.1
74-83-9	Bromomethane	26717	97	14.7	53	141
75-15-0	Carbon disulfide	25719	98.8	11.5	64.3	133.3
56-23-5	Carbon tetrachloride	28870	103.8	10.7	71.7	135.8
108-90-7	Chlorobenzene	29802	100	6.1	81.7	118.3
124-48-1	Chlorodibromomethane	27424	100	8.5	74.4	125.7
75-45-6	Chlorodifluoromethane	7197	84.4	14.9	39.6	129.2
75-00-3	Chloroethane	27069	99	13	60	137.9
67-66-3	Chloroform	29373	101.1	7.5	78.6	123.5
74-87-3	Chloromethane	27697	94.5	15	49.7	139.4
156-59-2	cis-1,2-Dichloroethene	27935	100.1	7.5	77.6	122.7
10061-01-5	cis-1,3-Dichloropropene	27197	99.5	8	75.4	123.6
1476-11-5	cis-1,4-Dichloro-2-butene	1524	101.5	14.9	56.7	146.2
110-82-7	Cyclohexane	20438	100.4	10	70.5	130.3
108-94-1	Cyclohexanone	9007	76.8	31.9	0	172.6
1868-53-7	Dibromofluoromethane	5702	99.1	6.5	79.7	118.5
74-95-3	Dibromomethane	24473	101.1	7.3	79.2	123
75-71-8	Dichlorodifluoromethane [Freon-12]	25410	92	20.1	31.8	152.3
75-43-4	Dichlorofluoromethane	1504	101.5	9.8	72	131
60-29-7	Diethyl ether	17189	98.6	10.2	67.9	129.4
108-20-3	Diisopropyl ether	22989	97.5	10.3	66.6	128.3
64-17-5	Ethanol	9543	99.2	17.1	47.9	150.5
141-78-6	Ethyl acetate	9208	96.8	13.9	55.2	138.4
97-63-2	Ethyl methacrylate	16674	98.7	9	71.8	125.6
637-92-3	Ethyl tert-butyl ether	19841	98.3	9.4	70.1	126.5
100-41-4	Ethylbenzene	33325	99.8	7	78.9	120.7
462-06-6	Fluorobenzene	1373	97.9	6.1	79.5	116.2
142-82-5	Heptane	11878	94.4	15	49.3	139.5
87-68-3	Hexachlorobutadiene	23535	100.1	11.3	66.2	133.9
67-72-1	Hexachloroethane	8718	102.9	10.3	71.8	133.9
110-54-3	Hexane	15545	95.5	15.9	47.9	143.1
74-88-4	Iodomethane	20229	100	10.4	68.8	131.3
78-83-1	Isobutyl alcohol	14123	97.7	11.7	62.6	132.8
108-21-4	Isopropyl acetate [Acetic acid]	7216	97.8	11.6	63	132.5
98-82-8	Isopropylbenzene	28636	101.5	9.9	71.9	131.1
179601-23-1	m,p-Xylene [3,4-Xylene]	28168	100.5	6.9	79.8	121.3
126-98-7	Methacrylonitrile	15982	97.9	11.6	63.2	132.5
79-20-9	Methyl acetate	19698	96	13.2	56.4	135.6
80-62-6	Methyl methacrylate	16524	97.7	10.2	67.1	128.3

Table : 24 LCS Control Limits for SW-846 8260 Water Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
1634-04-4	Methyl tert-butyl ether [MTBE]	29660	97.3	8.8	70.7	123.8
108-87-2	Methylcyclohexane	20025	101.8	10.1	71.5	132
75-09-2	Methylene chloride	27659	99.4	8.3	74.4	124.3
123-86-4	n-Butyl acetate	7247	96.8	9.4	68.7	124.9
71-36-3	n-Butyl alcohol	10122	95.1	12	59.3	131
104-51-8	n-Butylbenzene	24088	101.1	8.8	74.8	127.5
109-60-4	n-Propyl acetate	602	100.8	8.3	75.8	125.8
103-65-1	n-Propylbenzene	24419	101	8.5	75.7	126.4
91-20-3	Naphthalene	27847	94.6	11.3	60.8	128.4
95-47-6	o-Xylene	31776	100	7.2	78.4	121.7
99-87-6	p-Isopropyltoluene [p-Cymene]	24335	102	8.5	76.7	127.4
76-01-7	Pentachloroethane	11688	101.1	10.7	68.9	133.2
109-66-0	Pentane	3915	74.8	19.7	15.6	134
107-12-0	Propionitrile [Ethyl cyanide]	15701	99.9	12	63.9	135.9
135-98-8	sec-Butylbenzene	24191	101.1	8.1	76.6	125.5
100-42-5	Styrene	26985	100.5	7.6	77.8	123.3
994-05-8	tert-Amyl methyl ether [TAME]	19726	98.1	10.1	67.8	128.3
75-65-0	tert-Butyl alcohol	21112	98.6	10.1	68.3	128.9
762-75-4	tert-Butyl formate	6651	98.1	11.1	64.7	131.6
98-06-6	tert-Butylbenzene	23919	101	7.7	78	124
127-18-4	Tetrachloroethene	29017	101.3	9.3	73.5	129.1
109-99-9	Tetrahydrofuran	18021	95	12.8	56.7	133.2
108-88-3	Toluene	33510	100.1	6.8	79.6	120.7
2037-26-5	Toluene-d8	9809	100.4	3.8	89.1	111.8
156-60-5	trans-1,2-Dichloroethene	27663	99.5	8.2	74.9	124.1
10061-02-6	trans-1,3-Dichloropropene	27134	100	8.9	73.2	126.8
110-57-6	trans-1,4-Dichloro-2-butene	19320	91.5	16.1	43.1	139.8
79-01-6	Trichloroethene	30150	101.1	7.3	79.2	123
75-69-4	Trichlorofluoromethane [Freon-11]	26108	103	12.8	64.6	141.4
108-05-4	Vinyl acetate	18941	100.2	15.3	54.2	146.1
75-01-4	Vinyl chloride	29472	97.4	13.2	57.8	136.9
1330-20-7	Xylenes [total]	23426	100.1	7	79.2	121.1

Table : 25 LCS Control Limits for SW-846 8270 Solid Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
92-52-4	1,1-Biphenyl	1645	78.5	13	39.6	117.4
95-94-3	1,2,4,5-Tetrachlorobenzene	1810	77.8	13.7	36.7	118.9
120-82-1	1,2,4-Trichlorobenzene	3577	75.7	13.9	33.9	117.5
95-50-1	1,2-Dichlorobenzene	3352	74.6	14	32.6	116.7
528-29-0	1,2-Dinitrobenzene [1,2-DNB]	203	79.4	11.9	43.8	115.1
122-66-7	1,2-Diphenylhydrazine [Azobenzene]	2039	83	13.9	41.2	124.8
99-35-4	1,3,5-Trinitrobenzene [1,3,5-TNB]	154	89.2	10.7	57.2	121.3
541-73-1	1,3-Dichlorobenzene	3288	72.6	14.1	30.2	115
99-65-0	1,3-Dinitrobenzene [1,3-DNB]	598	84.6	14	42.5	126.7
106-46-7	1,4-Dichlorobenzene	3793	73.1	13.9	31.2	114.9
100-25-4	1,4-Dinitrobenzene	248	84.4	15.7	37.3	131.6
123-91-1	1,4-Dioxane	745	48.1	17.3	0	99.8
130-15-4	1,4-Naphthoquinone	150	81.2	8.8	55	107.5
106-50-3	1,4-Phenylenediamine	188	27.2	10.6	0	59
90-13-1	1-Chloronaphthalene	119	81.1	11.1	47.8	114.5
90-12-0	1-Methylnaphthalene	3004	79.2	13.2	39.6	118.9
134-32-7	1-Naphthylamine	169	54.9	20.1	0	115.1
58-90-2	2,3,4,6-Tetrachlorophenol	1724	84.7	13.6	44	125.4
935-95-5	2,3,5,6-Tetrachlorophenol	227	75.9	11.9	40.1	111.7
608-27-5	2,3-Dichloroaniline	108	82.4	13	43.5	121.3
95-95-4	2,4,5-Trichlorophenol	4014	82.6	13.7	41.4	123.9
118-79-6	2,4,6-Tribromophenol	2930	85.7	15.4	39.3	132
88-06-2	2,4,6-Trichlorophenol	4183	82.1	14.5	38.6	125.5
120-83-2	2,4-Dichlorophenol	3794	80.9	13.7	39.7	122.2
105-67-9	2,4-Dimethylphenol	3886	78.4	16.2	29.9	126.8
51-28-5	2,4-Dinitrophenol	3799	71	22	5	137.1
121-14-2	2,4-Dinitrotoluene	4075	86.8	12.9	48	125.6
87-65-0	2,6-Dichlorophenol	1364	79.2	12.6	41.3	117.1
606-20-2	2,6-Dinitrotoluene	3706	85	13	45.9	124.1
53-96-3	2-Acetylaminofluorene	175	94	13.3	54.2	133.7
91-58-7	2-Chloronaphthalene	3569	77.5	12.1	41.3	113.7
95-57-8	2-Chlorophenol	3977	77.3	14.5	33.9	120.7
321-60-8	2-Fluorobiphenyl	3191	79.5	11.8	43.9	115
367-12-4	2-Fluorophenol	3008	75.2	13.3	35.2	115.2
91-57-6	2-Methylnaphthalene	5059	80.1	14	38.2	122
95-48-7	2-Methylphenol (o-Cresol)	4016	77	14.9	32.3	121.7
91-59-8	2-Naphthylamine	172	39.4	13.1	0	78.9
88-74-4	2-Nitroaniline	3639	85.4	13.8	44	126.8
119-75-5	2-Nitrodiphenylamine	279	88.1	11.6	53.3	122.9
88-75-5	2-Nitrophenol	3804	79.6	14.5	36	123.1
109-06-8	2-Picoline [2-Methylpyridine]	181	64.5	12.7	26.5	102.5
91-94-1	3,3'-Dichlorobenzidine	3521	71.3	16.5	21.8	120.7
119-93-7	3,3'-Dimethylbenzidine	143	38.7	14	0	80.6
56-49-5	3-Methylcholanthrene	188	95.1	13	56	134.2
99-09-2	3-Nitroaniline	3454	75.9	14.3	33.1	118.8
65794-96-9	3,4-Methylphenol [m,p-Cresol]	2900	76.5	14.1	34.1	118.9
534-52-1	4,6-Dinitro-2-methylphenol	3739	80.7	17.2	29.2	132.2

Table : 25 LCS Control Limits for SW-846 8270 Solid Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
92-67-1	4-Aminobiphenyl	144	48.2	16.4	0	97.4
101-55-3	4-Bromophenyl phenyl ether	3708	85.1	13	46.1	124.1
59-50-7	4-Chloro-3-methylphenol	3880	83.3	12.9	44.7	121.8
106-47-8	4-Chloroaniline [p-Chloroanlinie]	3435	61.3	14.9	16.5	106.1
7005-72-3	4-Chlorophenyl phenyl ether	3673	83	12.7	45	120.9
106-44-5	4-Methylphenol [p-Cresol]	1555	84.1	14.1	41.9	126.2
100-02-7	4-Nitrophenol	3976	80.6	17	29.7	131.6
99-55-8	5-Nitro-o-toluidine [2-Amino-4-nitrotoluene]	187	69.8	15.8	22.5	117.1
57-97-6	7,12-Dimethylbenz(a)-anthracene	338	96.2	15.3	50.3	142.1
83-32-9	Acenaphthene	5300	81.3	13.7	40	122.5
208-96-8	Acenaphthylene	5194	81.8	16.8	31.5	132.1
98-86-2	Acetophenone	2101	73.9	13.6	33.3	114.6
62-53-3	Aniline	2467	59.6	17.6	6.7	112.5
120-12-7	Anthracene	5250	85.2	12.7	47	123.4
1912-24-9	Atrazine	1428	87.1	13.4	47	127.3
103-33-3	Azobenzene	378	82.1	14.2	39.4	124.8
56-55-3	Benz(a)anthracene	5385	87.4	12.9	48.8	126.1
100-52-7	Benzaldehyde	1299	55.9	30.2	0	146.5
92-87-5	Benzidine	1240	38.4	20.4	0	99.6
50-32-8	Benzo(a)pyrene	5500	86.9	13.9	45.1	128.7
205-99-2	Benzo(b)fluoranthene	5323	88.3	14.5	44.8	131.8
191-24-2	Benzo(g,h,i)perylene	5263	88.5	15.1	43	133.9
207-08-9	Benzo(k)fluoranthene	5386	89.6	14.2	46.9	132.3
65-85-0	Benzoic acid	2503	65.6	24.7	0	139.6
100-51-6	Benzyl alcohol	2895	75.7	15.6	29	122.4
111-91-1	bis(2-Chloroethoxy)methane	3705	78.4	14.2	35.7	121.1
111-44-4	Bis(2-chloroethyl) ether	3711	75.4	14.9	30.8	120.1
39638-32-9	bis(2-Chloroisopropyl) ether	769	82	16.3	33	131.1
117-81-7	Bis(2-ethylhexyl) phthalate	4018	91.9	13.7	50.8	133
103-23-1	bis(2-Ethylhexyl)adipate	156	90.8	10.1	60.5	121.1
85-68-7	Butyl benzyl phthalate	3956	90.3	14	48.4	132.3
105-60-2	Caprolactam	1203	81.3	11.9	45.6	117
86-74-8	Carbazole	3095	86.3	12	50.2	122.5
510-15-6	Chlorobenzilate	172	99.7	16.9	49	150.4
218-01-9	Chrysene	5395	87.1	12.2	50.4	123.7
84-74-2	Di-n-butyl phthalate	4041	89.4	12.8	51	127.7
117-84-0	Di-n-octyl phthalate	3985	92.4	16	44.5	140.2
2303-16-4	Diallate [cis or trans]	173	93.7	12.7	55.5	132
53-70-3	Dibenzo(a,h)anthracene	5393	89.5	14.7	45.3	133.7
132-64-9	Dibenzofuran	3749	81.5	12.7	43.5	119.6
84-66-2	Diethyl phthalate	4012	87.2	12.3	50.3	124.1
60-51-5	Dimethoate	137	68	13.3	28.1	107.9
131-11-3	Dimethyl phthalate	4023	85.9	12.6	48	123.8
60-11-7	Dimethylaminoazobenzene	177	98.7	11.6	63.7	133.6
88-85-7	Dinoseb	123	67.3	17.1	15.9	118.8
101-84-8	Diphenyl ether	114	95.6	6	77.7	113.5
122-39-4	Diphenylamine	854	79.5	10.6	47.6	111.4
62-50-0	Ethyl methanesulfonate	174	85.1	16.9	34.4	135.9

Table : 25 LCS Control Limits for SW-846 8270 Solid Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
206-44-0	Fluoranthene	5340	88.3	12.9	49.7	126.9
86-73-7	Fluorene	5150	84.2	13.8	42.9	125.4
118-74-1	Hexachlorobenzene	4138	83.5	13	44.5	122.4
87-68-3	Hexachlorobutadiene	4003	77.3	15.3	31.5	123.1
77-47-4	Hexachlorocyclopentadiene	3199	69.3	23.4	0	139.6
67-72-1	Hexachloroethane	4049	72.2	14.9	27.5	116.8
1888-71-7	Hexachloropropene	259	81.9	16.7	31.9	131.9
95-13-6	Indene	188	85.3	8.9	58.5	112
193-39-5	Indeno(1,2,3-cd)pyrene	5367	89.3	14.7	45.1	133.4
465-73-6	isodrin	167	93.8	12.8	55.5	132.1
78-59-1	Isophorone	3787	75.9	15.2	30.2	121.6
120-58-1	Isosafrole	174	89.5	15.4	43.3	135.8
91-80-5	Methapyriline	115	37.7	11.2	4.1	71.4
66-27-3	Methyl methanesulfonate	150	77.9	13.1	38.4	117.3
100-75-4	N-Nitorosopiperidine	232	89.4	9.8	60.1	118.7
924-16-3	N-Nitrosodi-n-butylamine	236	91.7	10.8	59.3	124.1
621-64-7	N-Nitrosodi-n-propylamine	3857	78.2	13.9	36.3	120
55-18-5	N-nitrosodiethylamine	421	82.1	13.8	40.7	123.5
62-75-9	N-Nitrosodimethylamine	3170	71.6	16.2	23.1	120.1
86-30-6	N-Nitrosodiphenylamine	2968	82.7	14.8	38.2	127.2
10595-95-6	n-Nitrosomethylethylamine	265	78.7	14.9	34.2	123.3
59-89-2	n-Nitrosomorpholine	172	91.3	13.8	49.9	132.8
930-55-2	n-Nitrosopyrrolidine	326	85.5	13.6	44.8	126.3
91-20-3	Naphthalene	5342	78.8	14.7	34.8	122.9
98-95-3	Nitrobenzene	4103	77.8	14.7	33.5	122
4165-60-0	Nitrobenzene-d5	3226	79.3	14.2	36.6	122
56-57-5	Nitroquinoline-1-oxide	177	91.3	24.5	17.9	164.6
126-68-1	O,O,O-Triethyl phosphorothioate	138	91.6	10.8	59.3	123.9
95-53-4	o-Toluidine	205	52.1	16	4	100.1
593-45-3	Octadecane	113	87.4	14.5	43.9	130.9
608-93-5	Pentachlorobenzene	346	89.7	11.8	54.3	125
76-01-7	Pentachloroethane	131	70.4	10.6	38.6	102.2
87-86-5	Pentachlorophenol	4161	78.7	18	24.7	132.6
82-68-8	Pentchloronitrobenzene	579	86.1	16	38.2	134
62-44-2	Phenacetin	185	95	12.5	57.4	132.6
85-01-8	Phenanthrene	5259	85.4	12	49.5	121.3
108-95-2	Phenol	4029	77.3	14.4	34.2	120.5
4165-62-2	Phenol-d5	1016	77.4	14.9	32.5	122.2
23950-58-5	Pronamide	179	93	12.4	55.8	130.2
129-00-0	Pyrene	5518	87.2	13.3	47.2	127.2
110-86-1	Pyridine	2732	53.4	19.5	0	111.9
91-22-5	Quinoline	219	90	11.9	54.1	125.8
94-59-7	Safrole	176	87.8	13.6	47	128.6
1718-51-0	Terphenyl-d14	3111	90.5	12.3	53.6	127.4
3689-24-5	Tetraethyl dithiopyrophosphate [Sulfotep]	136	94.4	14	52.3	136.5
297-97-2	Thionazine	139	94.6	10.7	62.4	126.9

Table : 26 LCS Control Limits for SW-846 8270 Water Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
92-52-4	1,1-Biphenyl	2247	82.1	11.1	48.9	115.3
95-94-3	1,2,4,5-Tetrachlorobenzene	2326	77.9	14.5	34.5	121.4
120-82-1	1,2,4-Trichlorobenzene	4716	72.6	14.5	29.2	116
95-50-1	1,2-Dichlorobenzene	4442	71.4	13.3	31.5	111.4
528-29-0	1,2-Dinitrobenzene [1,2-DNB]	112	83.9	8.3	59.1	108.7
122-66-7	1,2-Diphenylhydrazine [Azobenzene]	2244	85.4	12.2	48.9	121.8
99-35-4	1,3,5-Trinitrobenzene [1,3,5-TNB]	241	89.1	16	40.9	137.2
541-73-1	1,3-Dichlorobenzene	4375	68.6	13.6	27.7	109.5
99-65-0	1,3-Dinitrobenzene [1,3-DNB]	601	88.2	13.1	48.8	127.5
106-46-7	1,4-Dichlorobenzene	5433	70.4	13.9	28.6	112.2
123-91-1	1,4-Dioxane	1534	47.3	14.3	4.3	90.3
130-15-4	1,4-Naphthoquinone	229	60.7	28.3	0	145.6
106-50-3	1,4-Phenylenediamine	127	18.2	11.2	0	51.8
90-13-1	1-Chloronaphthalene	211	84.5	8.8	58.1	110.9
90-12-0	1-Methylnaphthalene	3742	80	13.1	40.8	119.1
134-32-7	1-Naphthylamine	258	73.7	16.6	23.8	123.6
58-90-2	2,3,4,6-Tetrachlorophenol	2293	89	13	50	128.1
935-95-5	2,3,5,6-Tetrachlorophenol	266	85.6	11.7	50.4	120.7
608-27-5	2,3-Dichloroaniline	150	99.2	9.8	69.7	128.7
95-95-4	2,4,5-Trichlorophenol	5707	88.1	11.8	52.8	123.4
118-79-6	2,4,6-Tribromophenol	2059	91.5	16	43.4	139.6
88-06-2	2,4,6-Trichlorophenol	6136	87.2	12.4	50	124.5
120-83-2	2,4-Dichlorophenol	5330	84	12.2	47.4	120.6
105-67-9	2,4-Dimethylphenol	5298	77.5	15.6	30.8	124.3
51-28-5	2,4-Dinitrophenol	5127	82.9	20	22.9	142.9
121-14-2	2,4-Dinitrotoluene	6032	92.3	11.8	56.9	127.8
87-65-0	2,6-Dichlorophenol	1583	84	11.4	49.9	118
606-20-2	2,6-Dinitrotoluene	5107	90.7	11.2	57.1	124.4
53-96-3	2-Acetylaminofluorene	228	98.9	12.9	60.2	137.7
91-58-7	2-Chloronaphthalene	5084	78	12.8	39.5	116.4
95-57-8	2-Chlorophenol	5571	77.5	13.2	38.1	117
93951-73-6	2-Chlorophenol-d4	119	79.9	8.7	53.8	106.1
321-60-8	2-Fluorobiphenyl	2263	81.2	12.4	43.9	118.6
367-12-4	2-Fluorophenol	2022	68.8	16.6	18.9	118.7
91-57-6	2-Methylnaphthalene	6330	80.7	13.6	40	121.4
95-48-7	2-Methylphenol (o-Cresol)	5800	73	14.5	29.6	116.5
91-59-8	2-Naphthylamine	257	59	18.9	2.4	115.6
88-74-4	2-Nitroaniline	4855	90.8	12.1	54.5	127.1
119-75-5	2-Nitrodiphenylamine	272	97.3	11.3	63.5	131.2
88-75-5	2-Nitrophenol	5097	84.6	12.7	46.5	122.7
109-06-8	2-Picoline [2-Methylpyridine]	195	71.6	12.6	33.9	109.4
91-94-1	3,3'-Dichlorobenzidine	4815	77.9	16.9	27.2	128.7
119-93-7	3,3'-Dimethylbenzidine	191	45.3	15.9	0	93
56-49-5	3-Methylcholanthrene	237	94	12.8	55.5	132.5
108-39-4	3-Methylphenol (m-Cresol)	248	50.6	12.3	13.8	87.4
99-09-2	3-Nitroaniline	4808	84.4	14.5	40.7	128
65794-96-9	3,4-Methylphenol [m,p-Cresol]	3472	69.7	13.6	29	110.3

Table : 26 LCS Control Limits for SW-846 8270 Water Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
534-52-1	4,6-Dinitro-2-methylphenol	5097	90.1	15.5	43.5	136.7
92-67-1	4-Aminobiphenyl	231	71.8	19.7	12.8	130.7
101-55-3	4-Bromophenyl phenyl ether	5074	89.1	11.5	54.5	123.7
59-50-7	4-Chloro-3-methylphenol	5338	85.5	11.3	51.7	119.3
106-47-8	4-Chloroaniline [p-Chloroanlinie]	4687	75.3	14	33.2	117.4
7005-72-3	4-Chlorophenyl phenyl ether	5071	86.7	11.3	52.8	120.6
106-44-5	4-Methylphenol [p-Cresol]	2798	72.5	15.8	25.1	119.8
100-02-7	4-Nitrophenol	5350	48.2	23.2	0	117.8
99-55-8	5-Nitro-o-toluidine [2-Amino-4-nitrotoluene]	260	82.1	14.6	38.3	125.9
57-97-6	7,12-Dimethylbenz(a)-anthracene	373	97.1	11.9	61.2	132.9
83-32-9	Acenaphthene	6952	84.5	12.3	47.4	121.5
208-96-8	Acenaphthylene	6662	85.3	14.7	41.1	129.5
98-86-2	Acetophenone	2877	82.1	12	46.1	118.2
62-53-3	Aniline	2851	62	18.6	6.2	117.9
120-12-7	Anthracene	6792	89.6	11	56.5	122.6
140-57-8	Aramite	100	82.8	16.3	33.9	131.8
1912-24-9	Atrazine	2328	92.8	16.4	43.7	142
103-33-3	Azobenzene	578	88.5	9.3	60.7	116.3
56-55-3	Benz(a)anthracene	6867	91.6	11.1	58.2	125
100-52-7	Benzaldehyde	1953	65.4	31.3	0	159.2
92-87-5	Benzidine	2070	49.4	25.9	0	127
50-32-8	Benzo(a)pyrene	7045	90.8	12.4	53.5	128.1
205-99-2	Benzo(b)fluoranthene	6767	92	12.9	53.2	130.8
191-24-2	Benzo(g,h,i)perylene	6624	92	13.9	50.3	133.7
207-08-9	Benzo(k)fluoranthene	6803	93.2	12.1	57	129.4
65-85-0	Benzoic acid	2536	35.9	20	0	96
100-51-6	Benzyl alcohol	3349	71.2	13.5	30.8	111.6
111-91-1	bis(2-Chloroethoxy)methane	5094	83.9	11.9	48.3	119.6
111-44-4	Bis(2-chloroethyl) ether	5139	80.8	12.6	43.1	118.4
39638-32-9	bis(2-Chloroisopropyl) ether	1140	83.4	15.4	37.3	129.5
117-81-7	Bis(2-ethylhexyl) phthalate	5288	95.2	13.3	55.3	135
85-68-7	Butyl benzyl phthalate	5173	93.3	13.5	52.7	133.9
105-60-2	Caprolactam	1642	22.3	7.7	0	45.3
86-74-8	Carbazole	4187	91.1	10.4	59.9	122.3
510-15-6	Chlorobenzilate	226	104.3	15.4	58.1	150.4
218-01-9	Chrysene	6779	91.3	10.7	59.3	123.3
124-18-5	Decane	126	66.9	12.8	28.5	105.3
84-74-2	Di-n-butyl phthalate	5329	93	11.4	58.7	127.4
117-84-0	Di-n-octyl phthalate	5222	95.5	15	50.5	140.4
2303-16-4	Diallate [cis or trans]	249	95.3	9.6	66.6	124.1
226-36-8	Dibenz(a,h)acridine	136	104.4	9.7	75.3	133.5
53-70-3	Dibenzo(a,h)anthracene	6840	92.7	13.8	51.3	134
132-64-9	Dibenzofuran	4963	85.3	10.8	52.8	117.7
84-66-2	Diethyl phthalate	5207	90.1	11.5	55.5	124.6
60-51-5	Dimethoate	214	75.6	34.8	0	180.1
131-11-3	Dimethyl phthalate	4977	86	13.7	44.8	127.1
60-11-7	Dimethylaminoazobenzene	238	97.1	11.6	62.3	131.8
88-85-7	Dinoseb	144	93.4	10.8	60.9	125.9

Table : 26 LCS Control Limits for SW-846 8270 Water Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
101-84-8	Diphenyl ether	142	91.7	7.8	68.3	115
122-39-4	Diphenylamine	754	83	9.2	55.4	110.5
298-04-4	Disulfoton	122	92.5	12.5	54.9	130.1
62-50-0	Ethyl methanesulfonate	215	90.1	9.4	61.8	118.4
206-44-0	Fluoranthene	6826	92.6	11.9	57	128.2
86-73-7	Fluorene	6786	88.1	12	52.2	124
118-74-1	Hexachlorobenzene	6263	88.7	12.1	52.5	124.9
87-68-3	Hexachlorobutadiene	5878	73.1	16.9	22.4	123.7
77-47-4	Hexachlorocyclopentadiene	4642	59.7	22.3	0	126.6
67-72-1	Hexachloroethane	5904	68	15.7	20.8	115.2
1888-71-7	Hexachloropropene	292	69.5	20.8	7.1	132
95-13-6	Indene	253	93.8	13.7	52.9	134.8
193-39-5	Indeno(1,2,3-cd)pyrene	6880	92.6	13.6	51.7	133.5
465-73-6	isodrin	212	97.6	10	67.6	127.5
78-59-1	Isophorone	5190	83.3	13.7	42.3	124.4
120-58-1	Isosafrole	230	91.1	11.8	55.8	126.4
91-80-5	Methapyriline	163	34.7	18.8	0	91
66-27-3	Methyl methanesulfonate	237	70.1	12.3	33.3	106.9
298-00-0	Methyl parathion	121	101.6	19	44.5	158.6
100-75-4	N-Nitorosopiperidine	299	88.6	10.8	56.2	120.9
924-16-3	N-Nitrosodi-n-butylamine	322	90.4	10.3	59.5	121.2
621-64-7	N-Nitrosodi-n-propylamine	5145	84	11.7	48.9	119.2
55-18-5	N-nitrosodiethylamine	488	81.8	12.9	43.1	120.6
62-75-9	N-Nitrosodimethylamine	3854	55.6	16.6	5.9	105.3
86-30-6	N-Nitrosodiphenylamine	3743	86.8	11.9	51	122.6
10595-95-6	n-Nitrosomethylethylamine	311	78.7	12.7	40.7	116.7
59-89-2	n-Nitrosomorpholine	214	86.2	10.3	55.4	116.9
930-55-2	n-Nitrosopyrrolidine	716	80.8	10.8	48.3	113.4
91-20-3	Naphthalene	6953	80	13.5	39.6	120.5
98-95-3	Nitrobenzene	5955	83	12.8	44.7	121.3
4165-60-0	Nitrobenzene-d5	2223	82.1	12.6	44.1	120
56-57-5	Nitroquinoline-1-oxide	224	98.8	26.2	20.1	177.5
126-68-1	O,O,O-Triethyl phosphorothioate	212	92.6	8.8	66.1	119
95-53-4	o-Toluidine	296	69.9	13.2	30.2	109.6
593-45-3	Octadecane	151	89	13.1	49.8	128.1
56-38-2	Parathion	152	102.6	12.3	65.6	139.5
608-93-5	Pentachlorobenzene	401	91.1	10.7	59	123.3
76-01-7	Pentachloroethane	139	60.9	10.4	29.6	92.1
87-86-5	Pentachlorophenol	6083	86.4	17.1	35.1	137.6
82-68-8	Pentchloronitrobenzene	618	94.5	13.4	54.3	134.7
62-44-2	Phenacetin	241	97.9	8.9	71.3	124.4
85-01-8	Phenanthrene	6822	89.6	10.2	59	120.1
108-95-2	Phenol	5832	46	20.8	0	108.4
4165-62-2	Phenol-d5	1491	63.9	23	0	132.8
298-02-2	Phorate	126	88.6	16.8	38.2	139
23950-58-5	Pronamide	249	97	10.5	65.3	128.6
129-00-0	Pyrene	7013	91.1	11.5	56.8	125.5
110-86-1	Pyridine	3821	45.5	16.7	0	95.6

Table : 26 LCS Control Limits for SW-846 8270 Water Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
91-22-5	Quinoline	249	100.1	10.5	68.5	131.8
94-59-7	Safrole	233	90	9.7	60.8	119.2
1718-51-0	Terphenyl-d14	1893	91.7	13.9	49.9	133.5
3689-24-5	Tetraethyl dithiopyrophosphate [Sulfotep]	200	96.7	11.9	60.9	132.5
297-97-2	Thionazine	196	102	10.1	71.6	132.4
108-98-5	Thiophenol [Benzenethiol]	103	44.2	24.8	0	118.8

Table : 27 LCS Control Limits for SW-846 8270 SIM Solid Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
90-12-0	1-Methylnaphthalene	2267	76.6	11.3	42.6	110.6
95-95-4	2,4,5-Trichlorophenol	169	79.9	14.9	35.1	124.8
91-58-7	2-Chloronaphthalene	615	76.7	10.5	45.4	108.1
321-60-8	2-Fluorobiphenyl	1961	80.6	11.6	45.7	115.4
91-57-6	2-Methylnaphthalene	2535	76.8	12.5	39.4	114.2
83-32-9	Acenaphthene	2813	77.7	11.2	44.2	111.3
208-96-8	Acenaphthylene	2761	77.1	12.8	38.7	115.5
120-12-7	Anthracene	2812	82.1	10.7	49.9	114.3
56-55-3	Benz(a)anthracene	2827	88	11.4	53.7	122.3
50-32-8	Benzo(a)pyrene	2789	87.3	12.5	49.8	124.7
205-99-2	Benzo(b)fluoranthene	2790	90.3	12.6	52.6	128
191-24-2	Benzo(g,h,i)perylene	2739	87.8	13	48.9	126.7
207-08-9	Benzo(k)fluoranthene	2761	89.3	11.2	55.6	122.9
111-44-4	Bis(2-chloroethyl) ether	192	65.4	15.8	18.1	112.7
117-81-7	Bis(2-ethylhexyl) phthalate	181	108.9	13.9	67.3	150.4
85-68-7	Butyl benzyl phthalate	144	103.5	10.6	71.7	135.3
86-74-8	Carbazole	183	79.3	14.6	35.6	123
218-01-9	Chrysene	2812	87.5	10.2	56.8	118.2
84-74-2	Di-n-butyl phthalate	150	106.5	12.9	67.7	145.2
117-84-0	Di-n-octyl phthalate	144	105.5	16.8	55	156
53-70-3	Dibenzo(a,h)anthracene	2778	89.2	13.2	49.6	128.8
132-64-9	Dibenzofuran	282	71.9	12.2	35.3	108.4
84-66-2	Diethyl phthalate	147	99.3	10.9	66.6	132
131-11-3	Dimethyl phthalate	149	99.3	9.3	71.4	127.1
206-44-0	Fluoranthene	2782	87.3	10.7	55.3	119.4
86-73-7	Fluorene	2795	80.6	11.2	47.1	114.1
118-74-1	Hexachlorobenzene	201	81.9	14.2	39.2	124.6
193-39-5	Indeno(1,2,3-cd)pyrene	2812	89.6	13.5	49.2	130
62-75-9	N-Nitrosodimethylamine	117	90.7	10.9	57.9	123.5
91-20-3	Naphthalene	2823	74.7	12.2	38	111.4
4165-60-0	Nitrobenzene-d5	531	84.7	13.6	43.9	125.4
87-86-5	Pentachlorophenol	259	82.4	15.5	35.9	128.9
85-01-8	Phenanthrene	2792	80.8	10.6	48.9	112.7
129-00-0	Pyrene	2792	85.8	10.2	55.2	116.5
1718-51-0	Terphenyl-d14	1864	95.3	12.6	57.5	133.2

Table : 28 LCS Control Limits for SW-846 8270 SIM Water Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
92-52-4	1,1-Biphenyl	106	77.3	7.3	55.5	99.1
123-91-1	1,4-Dioxane	220	57.1	15.8	9.6	104.6
90-12-0	1-Methylnaphthalene	2566	77.9	12.5	40.5	115.4
95-95-4	2,4,5-Trichlorophenol	488	84.1	13.4	44	124.2
118-79-6	2,4,6-Tribromophenol	164	83.7	12.7	45.7	121.8
606-20-2	2,6-Dinitrotoluene	118	67.2	15.8	19.7	114.7
91-58-7	2-Chloronaphthalene	717	72.4	12.7	34.2	110.6
321-60-8	2-Fluorobiphenyl	747	79.2	8.8	52.7	105.6
91-57-6	2-Methylnaphthalene	2984	76.5	12.6	38.7	114.3
83-32-9	Acenaphthene	3241	80.9	11.1	47.7	114.1
208-96-8	Acenaphthylene	3234	77.8	14.4	34.7	120.8
120-12-7	Anthracene	3224	85.8	11	52.8	118.7
56-55-3	Benz(a)anthracene	3277	89.3	10.1	58.9	119.7
50-32-8	Benzo(a)pyrene	3284	86.4	11.2	52.8	120
205-99-2	Benzo(b)fluoranthene	3248	89.7	12.3	52.9	126.4
191-24-2	Benzo(g,h,i)perylene	3178	86	14.1	43.7	128.4
207-08-9	Benzo(k)fluoranthene	3167	89.3	11.9	53.7	124.9
111-44-4	Bis(2-chloroethyl) ether	775	77.8	12.6	40	115.5
117-81-7	Bis(2-ethylhexyl) phthalate	275	114.1	19.6	55.3	172.9
85-68-7	Butyl benzyl phthalate	159	90.7	17.3	38.8	142.7
86-74-8	Carbazole	631	84	13.1	44.8	123.2
218-01-9	Chrysene	3215	88.3	10.4	57	119.6
84-74-2	Di-n-butyl phthalate	153	102.5	14.2	59.9	145.1
117-84-0	Di-n-octyl phthalate	157	103.3	19	46.3	160.2
53-70-3	Dibenzo(a,h)anthracene	3233	87.2	14.5	43.8	130.6
132-64-9	Dibenzofuran	864	77.5	14.1	35.2	119.8
84-66-2	Diethyl phthalate	142	94.5	13.5	54	134.9
131-11-3	Dimethyl phthalate	148	82.3	23.7	11.2	153.5
206-44-0	Fluoranthene	3242	89.1	10.4	57.8	120.4
86-73-7	Fluorene	3232	84.1	11.3	50.3	117.9
118-74-1	Hexachlorobenzene	947	84.8	13	45.8	123.8
87-68-3	Hexachlorobutadiene	187	84.5	14.7	40.3	128.6
193-39-5	Indeno(1,2,3-cd)pyrene	3244	88.7	13.7	47.6	129.7
62-75-9	N-Nitrosodimethylamine	162	62.5	10	32.6	92.4
91-20-3	Naphthalene	3277	78.8	11.9	43.2	114.4
4165-60-0	Nitrobenzene-d5	444	83.1	9.2	55.4	110.8
87-86-5	Pentachlorophenol	808	88.4	17.6	35.5	141.3
85-01-8	Phenanthrene	3240	83.6	10.3	52.8	114.5
108-95-2	Phenol	117	31.6	9.9	1.9	61.2
129-00-0	Pyrene	3252	87.1	11.3	53.1	121.1
1718-51-0	Terphenyl-d14	642	95.1	12.4	57.8	132.3

Table : 29 LCS Control Limits for SW-846 8290 Solid Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
3268-87-9	1,2,3,4,5,6,7,8-Octachlorodibenzo-p-dioxin [OCDD]	824	104.2	10.3	73.2	135.2
39001-02-0	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	816	104.6	13	65.5	143.8
35822-46-9	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	813	100.7	8.1	76.3	125.1
67562-39-4	1,2,3,4,6,7,8-Heptachlorodibenzofuran	835	103.8	10.2	73.2	134.5
55673-89-7	1,2,3,4,7,8,9-Heptachlorodibenzofuran	823	101.1	9.8	71.7	130.5
39227-28-6	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	830	101.7	9.9	72.1	131.2
70648-26-9	1,2,3,4,7,8-Hexachlorodibenzofuran	835	103.1	8.9	76.5	129.8
57653-85-7	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	844	103.7	10	73.8	133.5
57117-44-9	1,2,3,6,7,8-Hexachlorodibenzofuran	837	103.6	10.3	72.8	134.3
19408-74-3	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	845	104.8	11.2	71.3	138.2
72918-21-9	1,2,3,7,8,9-Hexachlorodibenzofuran	895	104.6	10.1	74.4	134.9
40321-76-4	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	840	99.2	8.6	73.6	124.9
57117-41-6	1,2,3,7,8-Pentachlorodibenzofuran	803	103.7	8.9	76.9	130.5
60851-34-5	2,3,4,6,7,8-Hexachlorodibenzofuran	942	103.4	9.7	74.3	132.6
57117-31-4	2,3,4,7,8-Pentachlorodibenzofuran	912	101.4	8.9	74.6	128.2
1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin	871	99	9.7	69.9	128.2
51207-31-9	2,3,7,8-Tetrachlorodibenzofuran	939	105.2	10.1	75.1	135.4

Table : 30 LCS Control Limits for SW-846 8290 Water Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
3268-87-9	1,2,3,4,5,6,7,8-Octachlorodibenzo-p-dioxin [OCDD]	539	107.7	9.1	80.5	134.9
39001-02-0	1,2,3,4,6,7,8,9-Octachlorodibenzofuran	553	107.9	14.1	65.5	150.3
35822-46-9	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	537	100.7	7.2	79.1	122.3
67562-39-4	1,2,3,4,6,7,8-Heptachlorodibenzofuran	574	105.2	8.1	80.8	129.6
55673-89-7	1,2,3,4,7,8,9-Heptachlorodibenzofuran	575	102.7	8.4	77.4	128
39227-28-6	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	568	102.9	7.7	79.8	126
70648-26-9	1,2,3,4,7,8-Hexachlorodibenzofuran	579	105	8.4	79.9	130.1
57653-85-7	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	585	105.7	9.4	77.5	134
57117-44-9	1,2,3,6,7,8-Hexachlorodibenzofuran	578	105.1	8.7	79	131.2
19408-74-3	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	585	106.6	10.1	76.3	136.9
72918-21-9	1,2,3,7,8,9-Hexachlorodibenzofuran	577	106.7	7.9	83	130.4
40321-76-4	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	579	98.6	7.5	76	121.2
57117-41-6	1,2,3,7,8-Pentachlorodibenzofuran	542	105.8	8	81.7	129.9
60851-34-5	2,3,4,6,7,8-Hexachlorodibenzofuran	597	105.5	8.1	81.1	129.8
57117-31-4	2,3,4,7,8-Pentachlorodibenzofuran	613	103.1	8.6	77.4	128.8
1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin	635	97.9	9	71	124.8
51207-31-9	2,3,7,8-Tetrachlorodibenzofuran	641	104.9	11.1	71.7	138.2

Table : 31 LCS Control Limits for SW-846 8310 Solid Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
90-12-0	1-Methylnaphthalene	740	88.3	16.1	40.1	136.5
91-57-6	2-Methylnaphthalene	742	87.3	15.7	40.1	134.5
83-32-9	Acenaphthene	826	87	13.2	47.4	126.5
208-96-8	Acenaphthylene	815	86.5	10.3	55.7	117.3
120-12-7	Anthracene	787	88.9	7.9	65	112.7
56-55-3	Benz(a)anthracene	838	97.3	9.5	68.8	125.7
50-32-8	Benzo(a)pyrene	838	91.3	9.6	62.6	120.1
205-99-2	Benzo(b)fluoranthene	838	95.8	8.2	71.3	120.3
191-24-2	Benzo(g,h,i)perylene	831	98.6	10	68.5	128.8
207-08-9	Benzo(k)fluoranthene	834	95	8.3	70	119.9
218-01-9	Chrysene	801	95.7	6.5	76.2	115.2
53-70-3	Dibenzo(a,h)anthracene	834	94.2	7.9	70.4	118
206-44-0	Fluoranthene	825	94.6	8.2	70	119.3
86-73-7	Fluorene	809	89.7	9.6	60.9	118.5
193-39-5	Indeno(1,2,3-cd)pyrene	675	98.9	11.6	64.2	133.6
91-20-3	Naphthalene	848	85.4	16.6	35.8	135.1
85-01-8	Phenanthrene	832	91.3	8.8	64.8	117.8
129-00-0	Pyrene	838	93.7	8.3	68.9	118.5

Table : 32 LCS Control Limits for SW-846 8310 Water Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
90-12-0	1-Methylnaphthalene	432	73.3	11	40.4	106.2
91-57-6	2-Methylnaphthalene	448	73.4	10.7	41.3	105.6
83-32-9	Acenaphthene	493	78.5	11.2	44.9	112
208-96-8	Acenaphthylene	478	80.5	9.1	53.2	107.9
120-12-7	Anthracene	453	85.8	9.2	58.4	113.3
56-55-3	Benz(a)anthracene	493	89	11.6	54.1	124
50-32-8	Benzo(a)pyrene	445	89.1	10.3	58.2	120
205-99-2	Benzo(b)fluoranthene	467	88.7	11.6	53.8	123.5
191-24-2	Benzo(g,h,i)perylene	428	88.6	11.3	54.8	122.4
207-08-9	Benzo(k)fluoranthene	460	88.4	11.8	53.1	123.7
218-01-9	Chrysene	469	90.3	9.6	61.4	119.2
53-70-3	Dibenzo(a,h)anthracene	452	87.2	10.5	55.6	118.7
206-44-0	Fluoranthene	485	86.9	10.6	55	118.9
86-73-7	Fluorene	483	82.2	9.7	53.1	111.3
193-39-5	Indeno(1,2,3-cd)pyrene	458	89.4	12.2	52.9	125.8
91-20-3	Naphthalene	440	73.3	10.5	41.8	104.7
85-01-8	Phenanthrene	489	85.2	9.5	56.9	113.6
129-00-0	Pyrene	472	86.3	9.3	58.3	114.2

Table : 33 LCS Control Limits for SW-846 8321 Solid Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
99-35-4	1,3,5-Trinitrobenzene [1,3,5-TNB]	228	92.4	7.6	69.4	115.3
99-65-0	1,3-Dinitrobenzene [1,3-DNB]	234	102.4	6.5	83	121.8
118-96-7	2,4,6-Trinitrotoluene	222	99	11.4	64.9	133.1
121-14-2	2,4-Dinitrotoluene	229	100.7	6.1	82.4	119
606-20-2	2,6-Dinitrotoluene	225	99.7	4.6	85.9	113.4
35572-78-2	2-Amino-4,6-dinitrotoluene	230	102.2	9.2	74.5	130
88-72-2	2-Nitrotoluene	232	98.1	8.8	71.6	124.5
99-08-1	3-Nitrotoluene	235	96.8	9.5	68.3	125.2
19406-51-0	4-Amino-2,6-dinitrotoluene	230	101.2	8.1	77	125.4
99-99-0	4-Nitrotoluene	231	99.2	9.1	71.9	126.5
121-82-4	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	231	100.2	7.6	77.4	122.9
98-95-3	Nitrobenzene	221	97.1	7.5	74.5	119.7
2691-41-0	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	225	89.3	8.1	65.1	113.5
78-11-5	PETN	229	102.3	13.6	61.6	143
479-45-8	tetryl	214	78	13.9	36.3	119.7

Table : 34 LCS Control Limits for SW-846 8321 Water Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
99-35-4	1,3,5-Trinitrobenzene [1,3,5-TNB]	452	88.6	7.4	66.4	110.9
99-65-0	1,3-Dinitrobenzene [1,3-DNB]	460	98	6.5	78.4	117.6
118-96-7	2,4,6-Trinitrotoluene	413	98.4	10.1	68.1	128.7
121-14-2	2,4-Dinitrotoluene	458	96.4	6.9	75.7	117.1
606-20-2	2,6-Dinitrotoluene	447	93.7	4.7	79.5	107.8
35572-78-2	2-Amino-4,6-dinitrotoluene	456	97.9	9.6	69.2	126.5
88-72-2	2-Nitrotoluene	359	82	10.1	51.8	112.2
99-08-1	3-Nitrotoluene	356	83	9.7	54.1	112
19406-51-0	4-Amino-2,6-dinitrotoluene	459	96.7	9.7	67.8	125.7
99-99-0	4-Nitrotoluene	361	85.5	10.6	53.8	117.2
121-82-4	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	458	99.6	8.9	72.9	126.3
98-95-3	Nitrobenzene	353	84.6	7.7	61.3	107.8
2691-41-0	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	452	87	8.3	62.2	111.7
78-11-5	PETN	354	95	11	62	128
479-45-8	tetryl	330	86.2	17.1	34.8	137.5

Table : 35 LCS Control Limits for SW-846 8330 Solid Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
528-29-0	1,2-Dinitrobenzene [1,2-DNB]	339	105.7	5.7	88.7	122.6
99-35-4	1,3,5-Trinitrobenzene [1,3,5-TNB]	607	101.9	7	80.8	123
99-65-0	1,3-Dinitrobenzene [1,3-DNB]	602	104.2	6.7	84.1	124.4
118-96-7	2,4,6-Trinitrotoluene	618	100.2	8.4	75.1	125.2
121-14-2	2,4-Dinitrotoluene	600	102.3	6.9	81.7	123
606-20-2	2,6-Dinitrotoluene	556	102.4	5.4	86.1	118.8
35572-78-2	2-Amino-4,6-dinitrotoluene	562	103.8	5.7	86.5	121
88-72-2	2-Nitrotoluene	591	102	6	83.9	120.1
99-08-1	3-Nitrotoluene	614	103.3	8	79.1	127.4
19406-51-0	4-Amino-2,6-dinitrotoluene	594	104.2	6.7	84	124.3
99-99-0	4-Nitrotoluene	595	102.2	6.5	82.6	121.8
121-82-4	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	595	103.1	6.9	82.4	123.8
98-95-3	Nitrobenzene	598	103.9	7.9	80.1	127.7
55-63-0	Nitroglycerin	352	97.2	8.2	72.6	121.8
2691-41-0	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	581	99.1	7.5	76.6	121.7
78-11-5	PETN	326	100.9	7.5	78.4	123.4
479-45-8	tetryl	584	101.8	11.9	66	137.6

Table : 36 LCS Control Limits for SW-846 8330/8330B Water Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
528-29-0	1,2-Dinitrobenzene [1,2-DNB]	978	101.1	6	82.9	119.2
99-35-4	1,3,5-Trinitrobenzene [1,3,5-TNB]	1578	99	8.5	73.4	124.6
99-65-0	1,3-Dinitrobenzene [1,3-DNB]	1572	98.7	7	77.6	119.8
118-96-7	2,4,6-Trinitrotoluene	1728	97	8.6	71.3	122.7
6629-29-4	2,4-Diamino-6-nitrotoluene	578	95	9.1	67.9	122.2
121-14-2	2,4-Dinitrotoluene	1563	98.9	7.1	77.7	120.2
59229-75-3	2,6-Diamino-4-nitrotoluene	577	96.6	8.3	71.5	121.6
606-20-2	2,6-Dinitrotoluene	1693	102	8.3	77	127
35572-78-2	2-Amino-4,6-dinitrotoluene	1568	99.4	6.8	78.9	120
88-72-2	2-Nitrotoluene	1630	98.4	9.6	69.5	127.3
618-87-1	3,5-Dinitroaniline	150	94.3	7.6	71.4	117.2
99-08-1	3-Nitrotoluene	1643	98.8	8.8	72.5	125.1
19406-51-0	4-Amino-2,6-dinitrotoluene	1586	100.3	8	76.2	124.5
99-99-0	4-Nitrotoluene	1654	99.1	9.3	71.2	127
121-82-4	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1833	99.1	10.4	67.8	130.3
80251-29-2	Hexahydro-1,3-dinitroso-5-nitro-1,3,5,triazine (DNX)	109	92.8	8.8	66.3	119.2
5755-27-1	Hexahydro-1-nitroso-3,5-dinitro-1,3,5-triazine (MNX)	249	94.3	12.5	56.8	131.8
98-95-3	Nitrobenzene	1743	99.3	11.4	65	133.5
55-63-0	Nitroglycerin	1076	100.4	8.8	73.8	126.9
2691-41-0	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	1755	100	11.8	64.7	135.2
78-11-5	PETN	1079	100.2	9	73.1	127.3
479-45-8	tetryl	1597	95.8	10.7	63.6	128

Table : 37 LCS Control Limits for SW-846 8330B Solid Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
528-29-0	1,2-Dinitrobenzene [1,2-DNB]	283	98.9	6.8	78.3	119.4
99-35-4	1,3,5-Trinitrobenzene [1,3,5-TNB]	450	98	6.1	79.7	116.3
99-65-0	1,3-Dinitrobenzene [1,3-DNB]	461	96.3	7.7	73.3	119.4
118-96-7	2,4,6-Trinitrotoluene	443	95.8	8.2	71.3	120.3
121-14-2	2,4-Dinitrotoluene	457	98	7.5	75.4	120.5
606-20-2	2,6-Dinitrotoluene	430	98	6.3	79	117
35572-78-2	2-Amino-4,6-dinitrotoluene	455	96.5	8.7	70.5	122.6
88-72-2	2-Nitrotoluene	447	96.8	9.1	69.6	124.1
618-87-1	3,5-Dinitroaniline	115	101.6	5.3	85.6	117.5
99-08-1	3-Nitrotoluene	448	97.7	10.3	66.8	128.6
19406-51-0	4-Amino-2,6-dinitrotoluene	434	95.4	10.6	63.8	127.1
99-99-0	4-Nitrotoluene	451	97.3	8.9	70.7	123.8
121-82-4	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	457	97.9	10.3	67.1	128.7
98-95-3	Nitrobenzene	440	97.9	10.4	66.6	129.1
55-63-0	Nitroglycerin	386	98.1	8.5	72.7	123.5
2691-41-0	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	422	99.1	8.2	74.4	123.8
78-11-5	PETN	376	100.1	9.4	72	128.2
479-45-8	tetryl	377	101.3	11.1	68	134.5

Table : 38 LCS Control Limits for SW-846 9020 Series Solid Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
57-12-5	Cyanide, Total	842	98.2	7.4	76.1	120.4

Table : 39 LCS Control Limits for SW-846 9020 Series Water Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
57-12-5	Cyanide, Total	1660	99	5.5	82.5	115.5

Table : 40 LCS Control Limits for SW-846 9056 Solid Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
24959-67-9	Bromide	222	101	5.1	85.7	116.3
16887-00-6	Chloride	612	100.9	4.7	86.8	114.9
16984-48-8	Fluoride	300	100.3	9.1	72.8	127.7
14797-55-8	Nitrate	680	99.2	4	87.1	111.3
14797-65-0	Nitrite	419	100.3	4.9	85.7	114.8
14265-44-2	Phosphate	142	102.4	3.8	91.1	113.8
14808-79-8	Sulfate	305	100.9	4.7	86.8	115

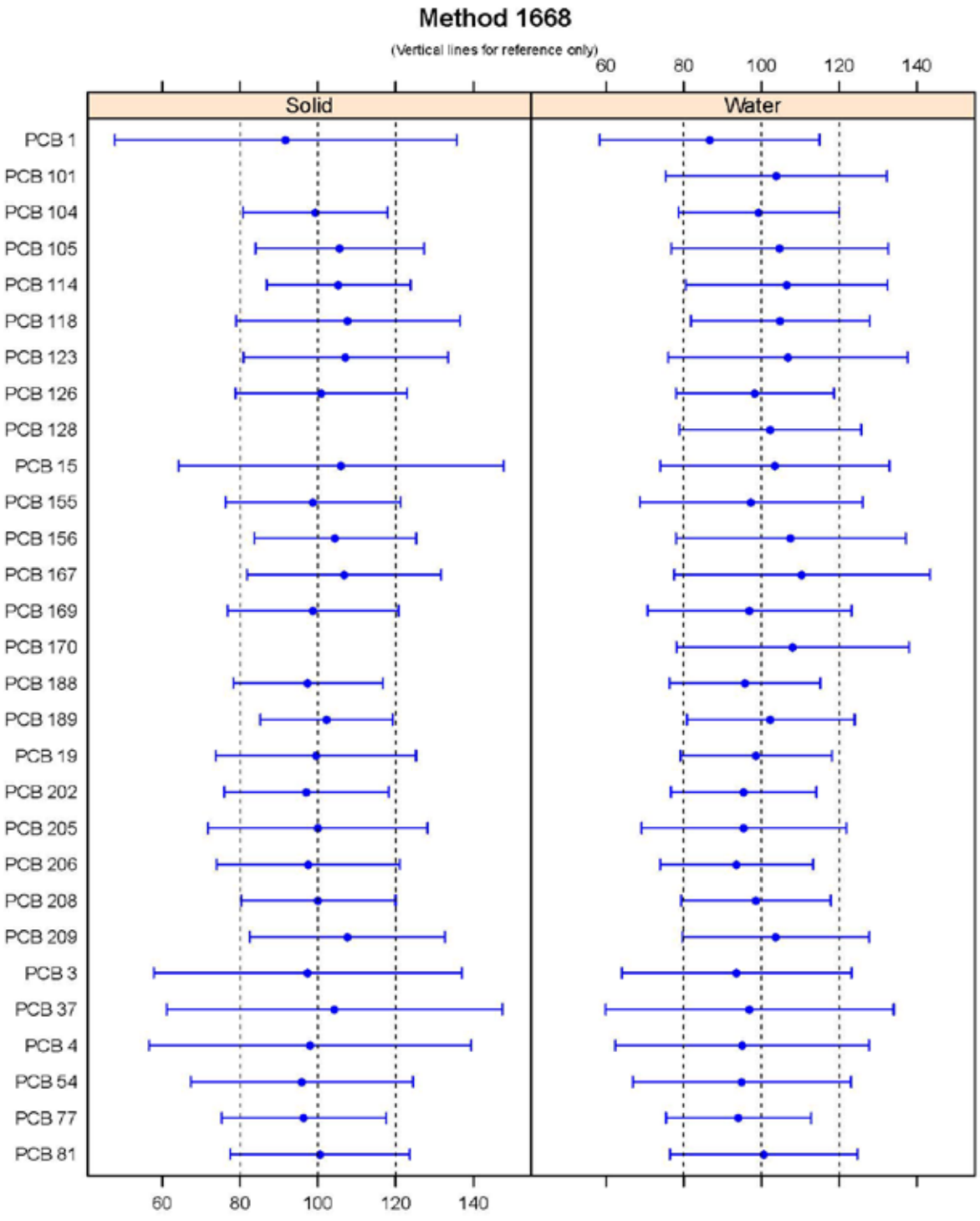
Table : 41 LCS Control Limits for SW-846 9056 Water Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
24959-67-9	Bromide	2199	100.3	3.2	90.8	109.7
16887-00-6	Chloride	4948	98.5	4	86.5	110.6
16984-48-8	Fluoride	3251	99.7	4	87.8	111.6
14797-55-8	Nitrate	3192	99.7	3.9	87.9	111.4
14797-65-0	Nitrite	2583	98.9	3.9	87.3	110.6
14265-44-2	Phosphate	843	97.8	6.1	79.6	116
14808-79-8	Sulfate	4155	99.2	4.1	86.7	111.6

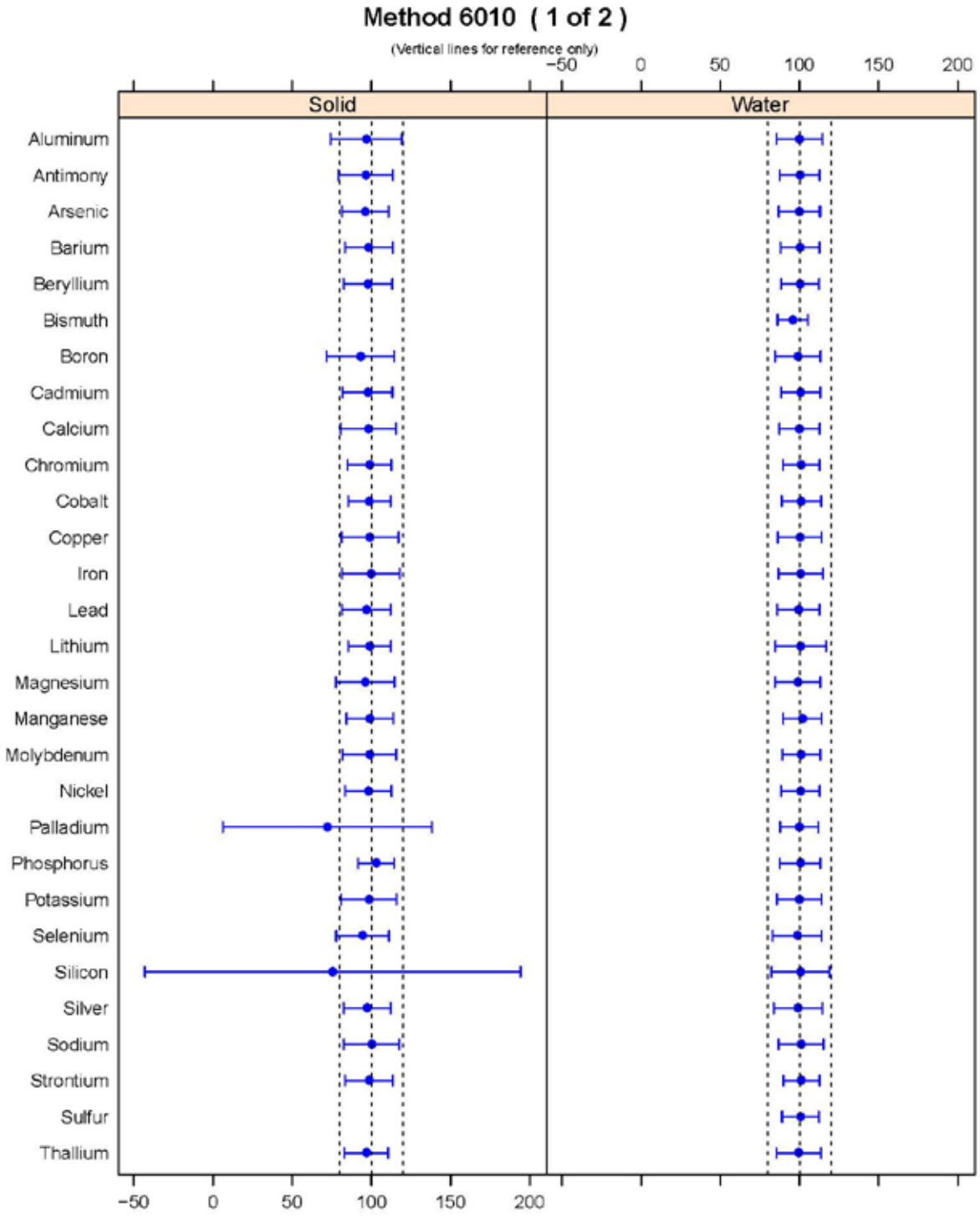
Table : 42 LCS Control Limits for SW-846 RSK175 Water Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
74-86-2	Acetylene	719	99.6	9.8	70.2	129.1
106-97-8	Butane	262	97.3	7.3	75.4	119.2
124-38-9	Carbon dioxide	441	100.8	6.9	80	121.6
74-84-0	Ethane	2240	102.6	9.6	73.9	131.4
74-85-1	Ethylene	2284	102.5	10.2	72.1	133
75-28-5	Isobutane	267	97.6	6.6	77.9	117.3
74-82-8	Methane	2459	99.2	8.7	73.1	125.3
74-98-6	Propane	900	98.1	8.2	73.7	122.6
115-07-1	Propene	133	142.4	14.4	99.3	185.5

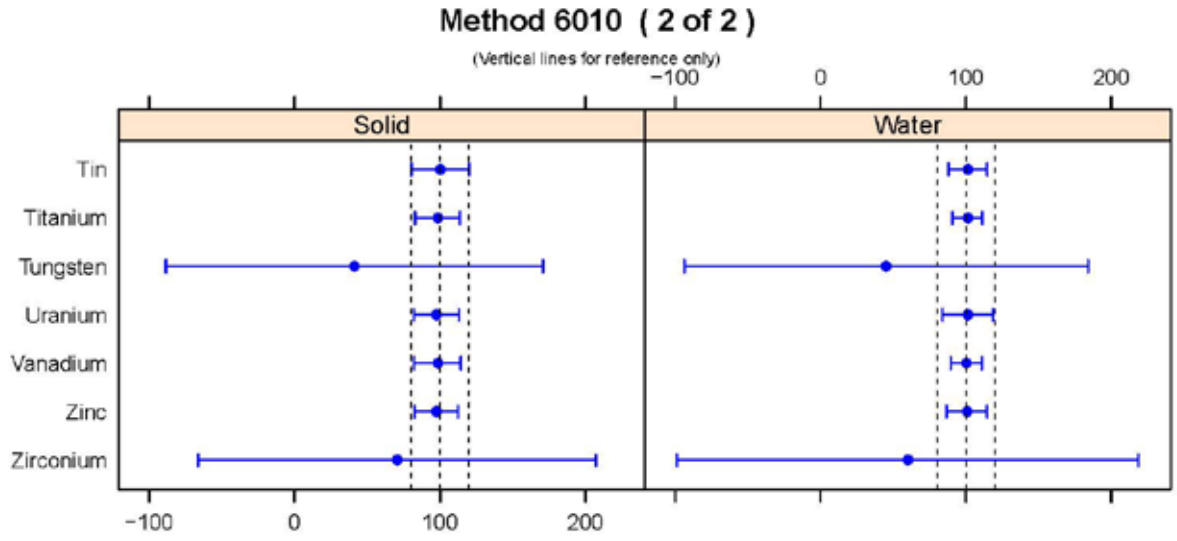
Table : 43 LCS Control Limits for SW-846 TO15 Gas Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
630-20-6	1,1,1,2-Tetrachloroethane	1344	97.9	10.5	66.5	129.4
71-55-6	1,1,1-Trichloroethane	5436	96.7	9.5	68.3	125.2
79-34-5	1,1,2,2-Tetrachloroethane	5273	95.9	10.4	64.6	127.2
79-00-5	1,1,2-Trichloroethane	5332	95.9	7.7	72.9	118.9
76-13-1	1,1,2-Trifluoro-1,2,2-trichloroethane [Freon-113]	5351	96.1	10	66	126.2
75-34-3	1,1-Dichloroethane	5422	97	9.7	67.8	126.2
75-35-4	1,1-Dichloroethene	3503	97.3	11.9	61.4	133.1
96-18-4	1,2,3-Trichloropropane	465	99.6	8	75.6	123.5
120-82-1	1,2,4-Trichlorobenzene	4545	98.5	14.5	55	142.1
95-63-6	1,2,4-Trimethylbenzene	4699	99.2	11.1	66	132.4
106-93-4	1,2-Dibromoethane	4655	98.2	7.9	74.3	122
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	4572	92.4	9.7	63.4	121.4
95-50-1	1,2-Dichlorobenzene	4739	95.7	11	62.7	128.7
107-06-2	1,2-Dichloroethane	5467	96.8	10.5	65.2	128.3
78-87-5	1,2-Dichloropropane	4729	95.7	8.9	69	122.5
108-67-8	1,3,5-Trimethylbenzene	4679	98.3	10.4	67.1	129.5
106-99-0	1,3-Butadiene	3167	99.8	11.4	65.5	134.1
541-73-1	1,3-Dichlorobenzene	4737	97.1	10.9	64.5	129.6
142-28-9	1,3-Dichloropropane	165	105.2	14.4	62	148.4
542-75-6	1,3-Dichloropropene	560	100.7	8.1	76.5	124.9
106-46-7	1,4-Dichlorobenzene	4719	95.8	11.8	60.4	131.2
123-91-1	1,4-Dioxane	2656	96.5	8.6	70.7	122.2
540-84-1	2,2,4-Trimethylpentane [Isooctane]	3008	94.3	8.8	67.8	120.8
78-93-3	2-Butanone [MEK]	4635	98.4	10.4	67.3	129.5
95-49-8	2-Chlorotoluene	1092	101.9	9.2	74.3	129.6
591-78-6	2-Hexanone	4600	95.4	11	62.4	128.4
67-63-0	2-Propanol [Isopropyl alcohol]	3069	88.4	12.3	51.5	125.4
622-96-8	4-Ethyltoluene	4673	97.9	10.3	67	128.7
108-10-1	4-Methyl-2-pentanone [MIBK]	4646	98.5	10.5	67.1	129.9
67-64-1	Acetone	4600	92.7	11.6	57.8	127.6
75-05-8	Acetonitrile	1999	97.3	11.6	62.6	132.1
107-02-8	Acrolein [Propenal]	2469	93.8	10.6	62	125.5
107-13-1	Acrylonitrile	2105	103.7	10.9	70.9	136.5
107-05-1	Allyl chloride	2980	101.1	10.1	70.9	131.2
98-83-9	alpha-Methylstyrene	1976	97.3	10.2	66.7	127.9
71-43-2	Benzene	5436	93.8	8.4	68.7	118.9
100-44-7	Benzyl chloride	4419	98.7	16.2	50.2	147.3
75-27-4	Bromodichloromethane	4682	99.9	9.3	71.9	127.8
75-25-2	Bromoform	4638	102.3	12.1	65.9	138.7
74-83-9	Bromomethane	2657	98.6	11.8	63.3	133.9
106-97-8	Butane	587	96.2	10.9	63.6	128.9
75-15-0	Carbon disulfide	4756	95.6	12.7	57.4	133.8
56-23-5	Carbon tetrachloride	4202	99.6	10.7	67.5	131.7
108-90-7	Chlorobenzene	4652	94.5	8	70.4	118.6
124-48-1	Chlorodibromomethane	4628	99.9	10	69.8	129.9
75-45-6	Chlorodifluoromethane	559	102.1	14.3	59.3	144.9
75-00-3	Chloroethane	5370	94.7	10.6	62.9	126.5

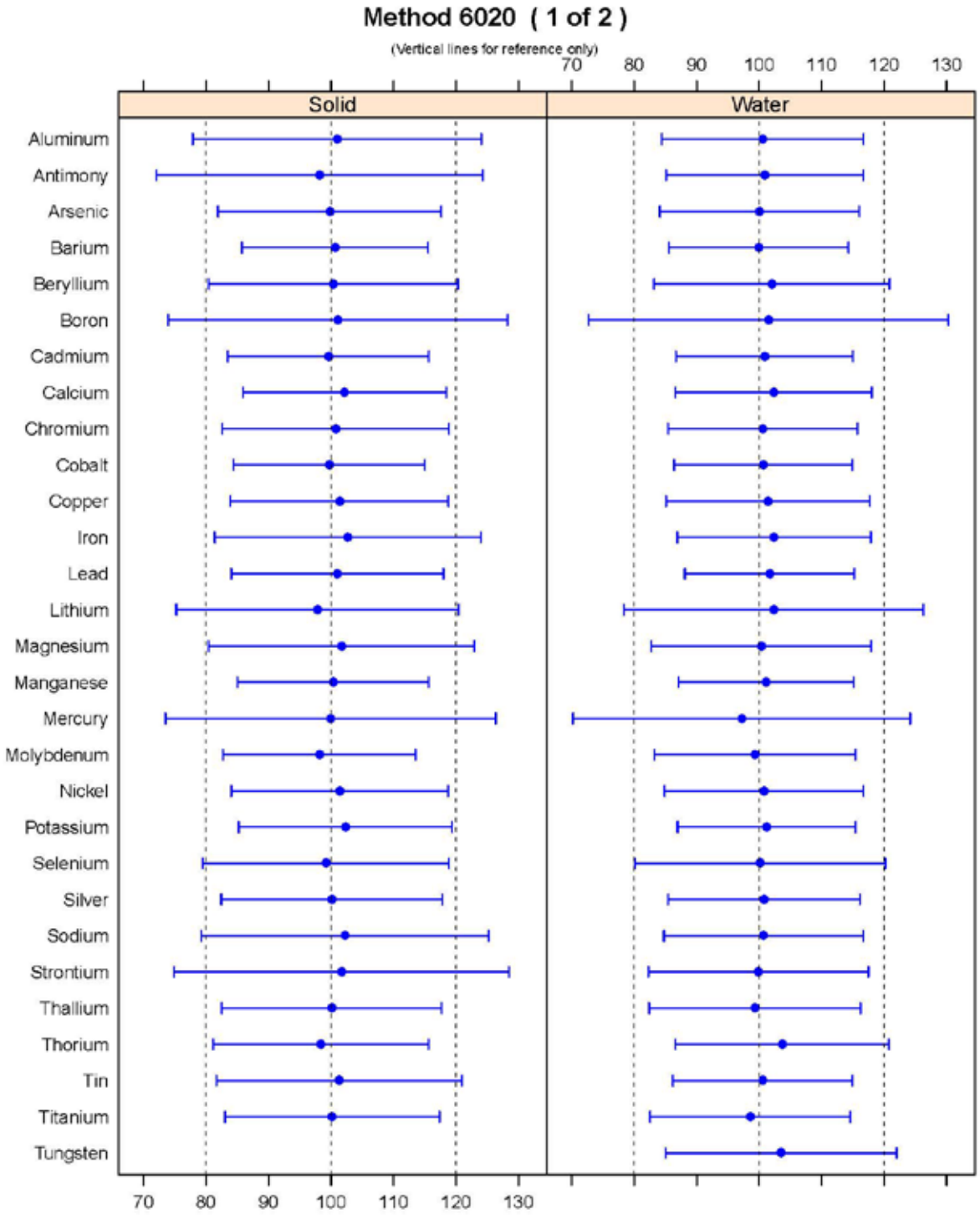
Table : 43 LCS Control Limits for SW-846 TO15 Gas Matrix						
CAS ID	**Analyte**	**N Records**	**Mean**	**Standard Deviation**	**Lower Control Limit**	**Upper Control Limit**
67-66-3	Chloroform	5481	95.3	9.3	67.5	123.1
74-87-3	Chloromethane	4540	95.2	12.2	58.7	131.8
156-59-2	cis-1,2-Dichloroethene	5320	95.6	8.4	70.2	120.9
10061-01-5	cis-1,3-Dichloropropene	4691	98.8	9.7	69.8	127.7
110-82-7	Cyclohexane	3178	93.5	7.7	70.4	116.5
124-18-5	Decane	1982	93.8	7.9	70	117.6
75-71-8	Dichlorodifluoromethane [Freon-12]	5307	93.6	11.5	59.2	128.1
108-20-3	Diisopropyl ether	2309	93.5	8	69.5	117.4
64-17-5	Ethanol	2981	91.8	11.1	58.7	125
141-78-6	Ethyl acetate	2835	96.4	10.5	64.9	127.9
100-41-4	Ethylbenzene	5420	96.8	9	69.7	123.9
142-82-5	Heptane	3163	95.7	8.9	69	122.5
87-68-3	Hexachlorobutadiene	4551	96.7	13.7	55.5	138
110-54-3	Hexane	3150	91.6	9.5	63.1	120.1
98-82-8	Isopropylbenzene	3022	95.6	9.3	67.6	123.5
179601-23-1	m/p-Xylene [3/4-Xylene]	5019	97.3	12.3	60.5	134.2
80-62-6	Methyl methacrylate	3037	98.9	9.7	69.8	127.9
1634-04-4	Methyl tert-butyl ether [MTBE]	4681	95.5	10	65.5	125.6
75-09-2	Methylene chloride	5314	88.8	8.9	62.2	115.4
71-36-3	n-Butyl alcohol	1981	97.5	11.7	62.4	132.6
104-51-8	n-Butylbenzene	2656	97.7	10.6	65.8	129.5
112-40-3	n-Dodecane	1932	104.4	14.1	62.2	146.7
103-65-1	n-Propylbenzene	2570	95.7	9	68.6	122.7
91-20-3	Naphthalene	2439	97.5	13.4	57.3	137.7
111-84-2	Nonane	2617	95.4	10.8	62.9	127.9
95-47-6	o-Xylene	5334	96.3	9.7	67.4	125.3
111-65-9	Octane	2514	95	8.7	68.8	121.3
99-87-6	p-Isopropyltoluene [p-Cymene]	2694	98.1	10.5	66.6	129.7
109-66-0	Pentane	712	96.7	11.3	62.8	130.5
115-07-1	Propene	3193	96.6	13.3	56.8	136.4
135-98-8	sec-Butylbenzene	2665	96.4	9.6	67.7	125
100-42-5	Styrene	4735	100.1	9	73	127.3
75-65-0	tert-Butyl alcohol	2997	86.8	20.9	24	149.5
98-06-6	tert-Butylbenzene	2710	94.3	9.8	64.9	123.6
127-18-4	Tetrachloroethene	5432	95.2	9.7	66.2	124.3
109-99-9	Tetrahydrofuran	3192	93.7	9.8	64.3	123
108-88-3	Toluene	5406	92.7	8.8	66.4	118.9
156-60-5	trans-1,2-Dichloroethene	5411	95.5	9.5	67	123.9
10061-02-6	trans-1,3-Dichloropropene	4621	104	9.6	75.1	132.9
79-01-6	Trichloroethene	5478	96.7	8.7	70.5	122.8
75-69-4	Trichlorofluoromethane [Freon-11]	5376	93.7	10.6	61.9	125.5
1120-21-4	Undecane	1976	96.1	9	69.1	123.1
108-05-4	Vinyl acetate	4599	97.4	13.7	56.1	138.6
593-60-2	Vinyl bromide	1054	98.4	9.2	70.9	125.9
75-01-4	Vinyl chloride	5445	95.1	10.4	63.8	126.5

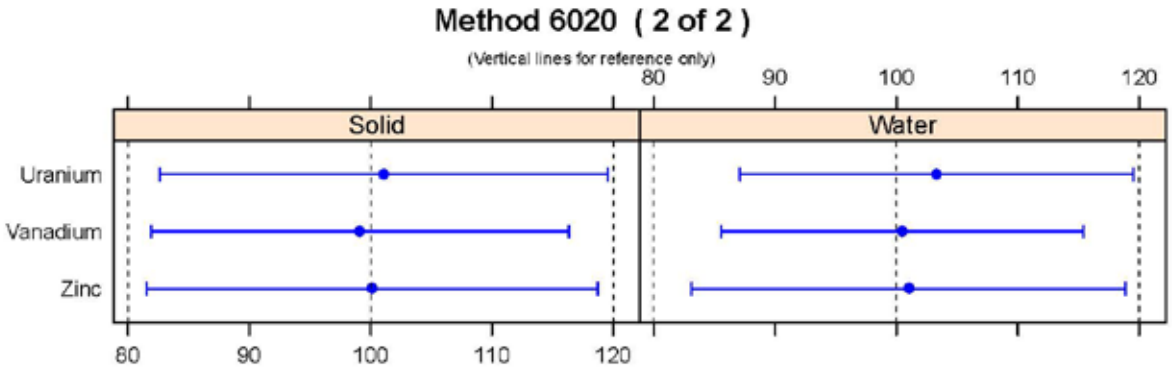
Appendix C
Plots of LCS Control Limits

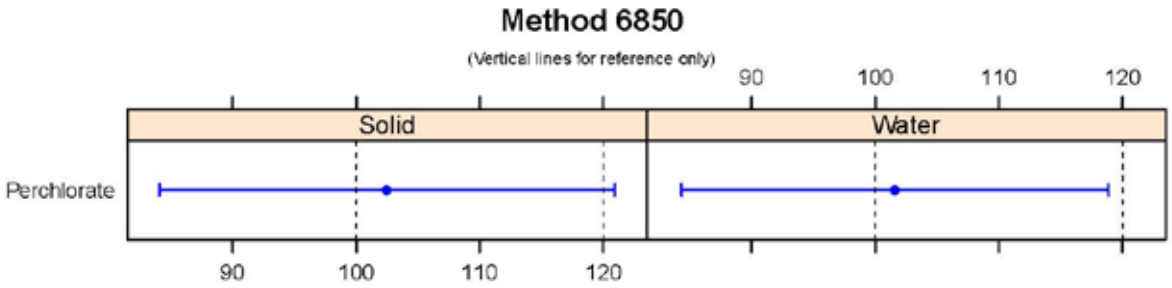

Method 1668
(Vertical lines for reference only)
Solid
Water
PCB 1
PCB 101
PCB 104
PCB 105
PCB 114
PCB 118
PCB 123
PCB 126
PCB 128
PCB 15
PCB 155
PCB 156
PCB 167
PCB 169
PCB 170
PCB 188
PCB 189
PCB 19
PCB 202
PCB 205
PCB 206
PCB 208
PCB 209
PCB 3
PCB 37
PCB 4
PCB 54
PCB 77
PCB 81
60
80
100
120
140

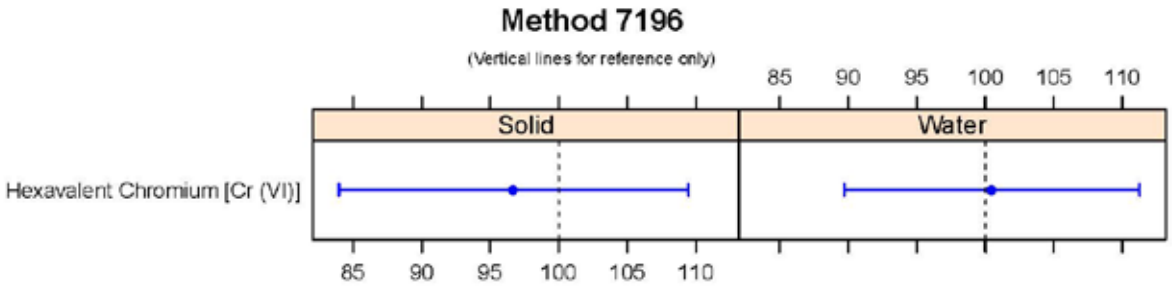

Method 6010 (1 of 2)
(Vertical lines for reference only)
Solid
Water
Aluminum
Antimony
Arsenic
Barium
Beryllium
Bismuth
Boron
Cadmium
Calcium
Chromium
Cobalt
Copper
Iron
Lead
Lithium
Magnesium
Manganese
Molybdenum
Nickel
Palladium
Phosphorus
Potassium
Selenium
Silicon
Silver
Sodium
Strontium
Sulfur
Thallium
−50
0
50
100
150
200

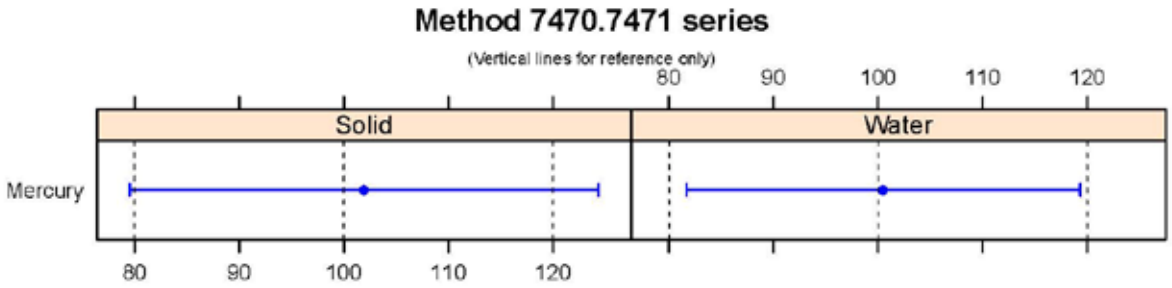

Method 6010 (2 of 2)
(Vertical lines for reference only)
−100
0
100
200
Solid
Water
Tin
Titanium
Tungsten
Uranium
Vanadium
Zinc
Zirconium
−100
0
100
200

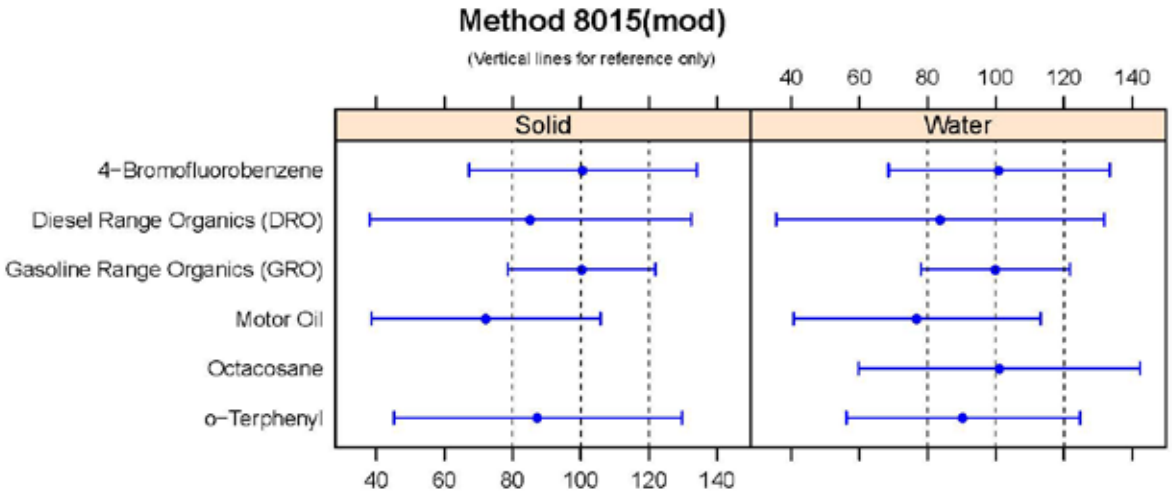

Method 6020 (1 of 2)
(Vertical lines for reference only)
Solid
Water
Aluminum
Antimony
Arsenic
Barium
Beryllium
Boron
Cadmium
Calcium
Chromium
Cobalt
Copper
Iron
Lead
Lithium
Magnesium
Manganese
Mercury
Molybdenum
Nickel
Potassium
Selenium
Silver
Sodium
Strontium
Thallium
Thorium
Tin
Titanium
Tungsten
70
80
90
100
110
120
130

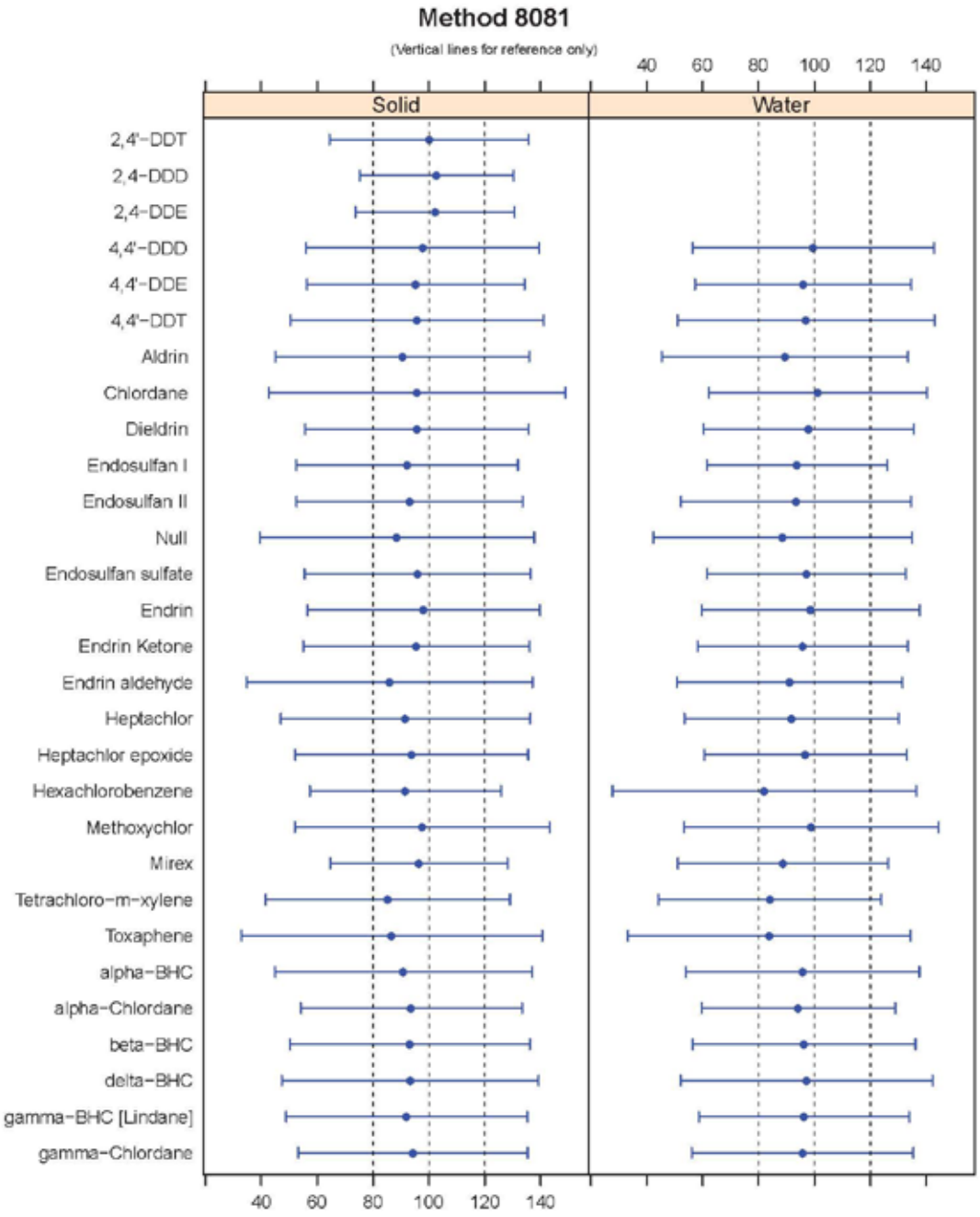

Method 6020 (2 of 2)
(Vertical lines for reference only)
Solid
Water
Uranium
Vanadium
Zinc
80
90
100
110
120

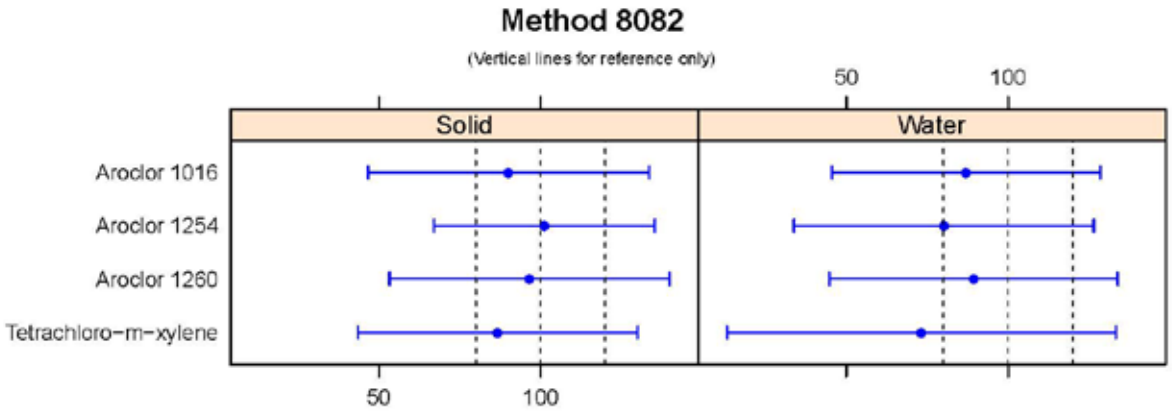

Method 6850
(Vertical lines for reference only)
90
100
110
120
Solid
Water
Perchlorate
90
100
110
120

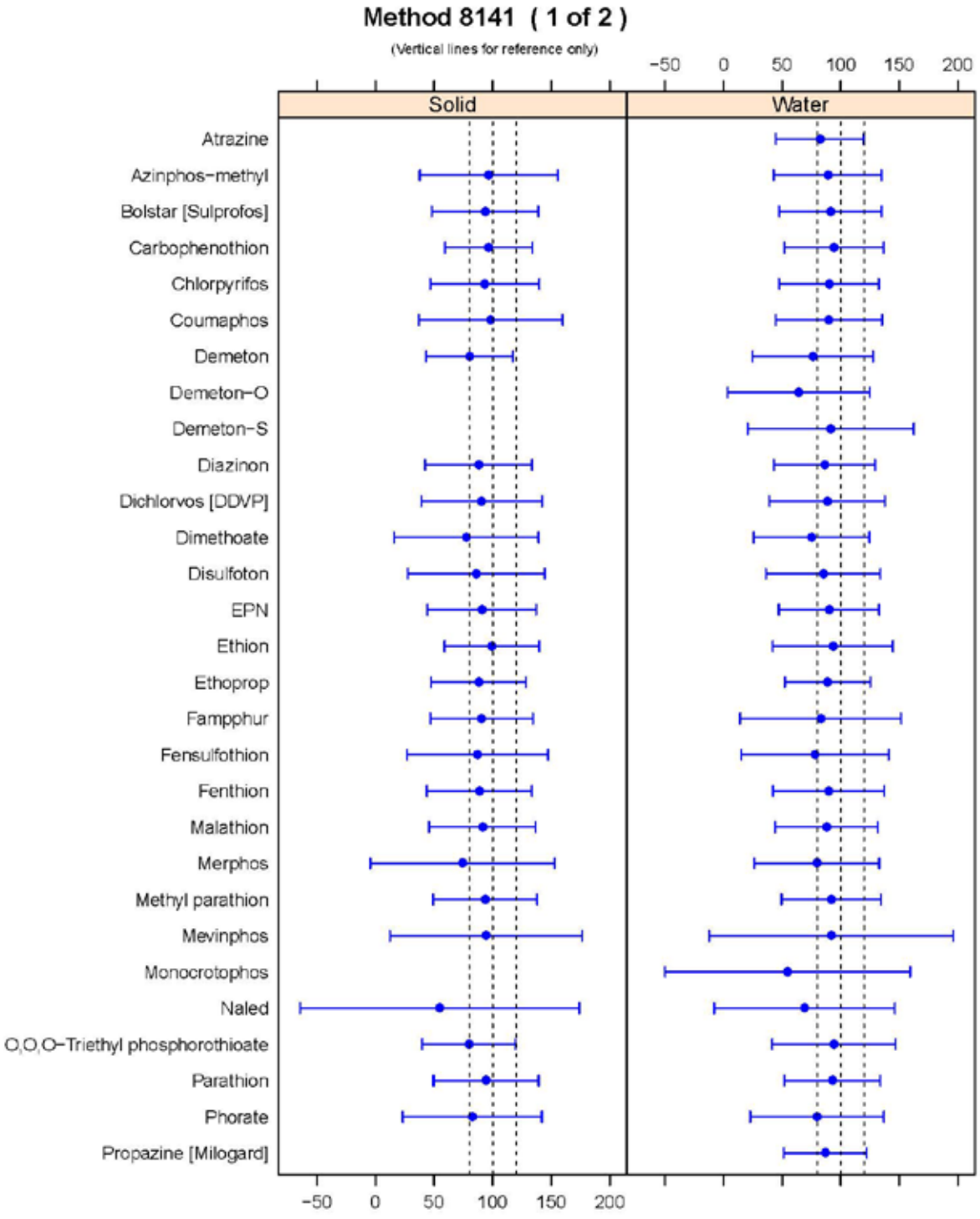

Method 7196
(Vertical lines for reference only)
Solid
Water
Hexavalent Chromium [Cr (VI)]
85
90
95
100
105
110

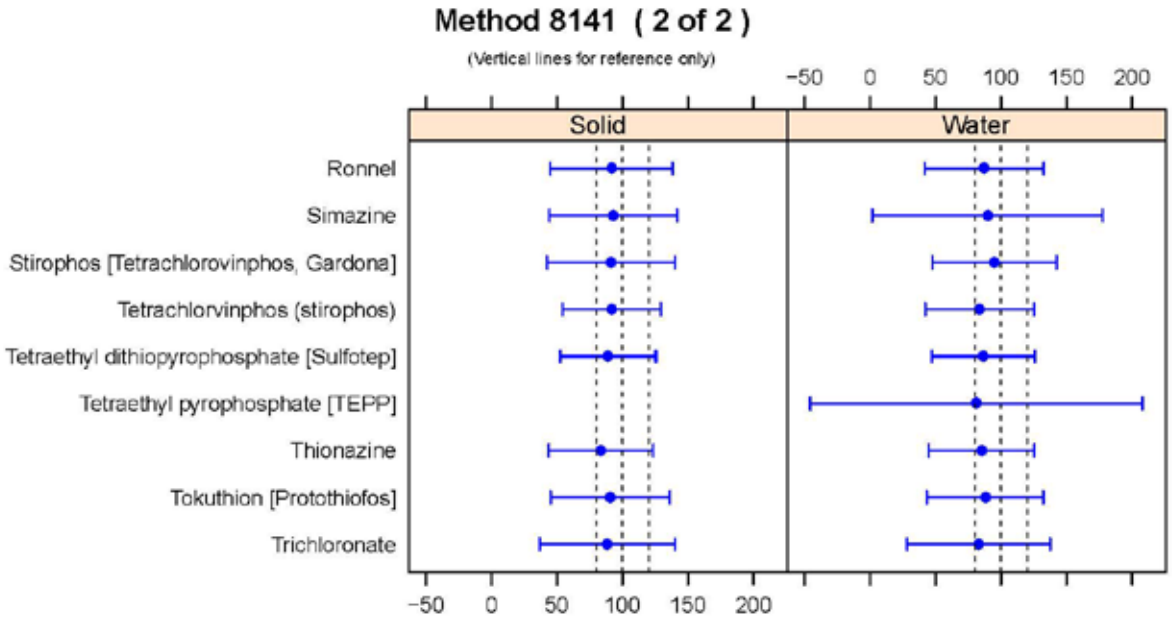

Method 7470.7471 series
(Vertical lines for reference only)
80
90
100
110
120
Solid
Water
Mercury
80
90
100
110
120

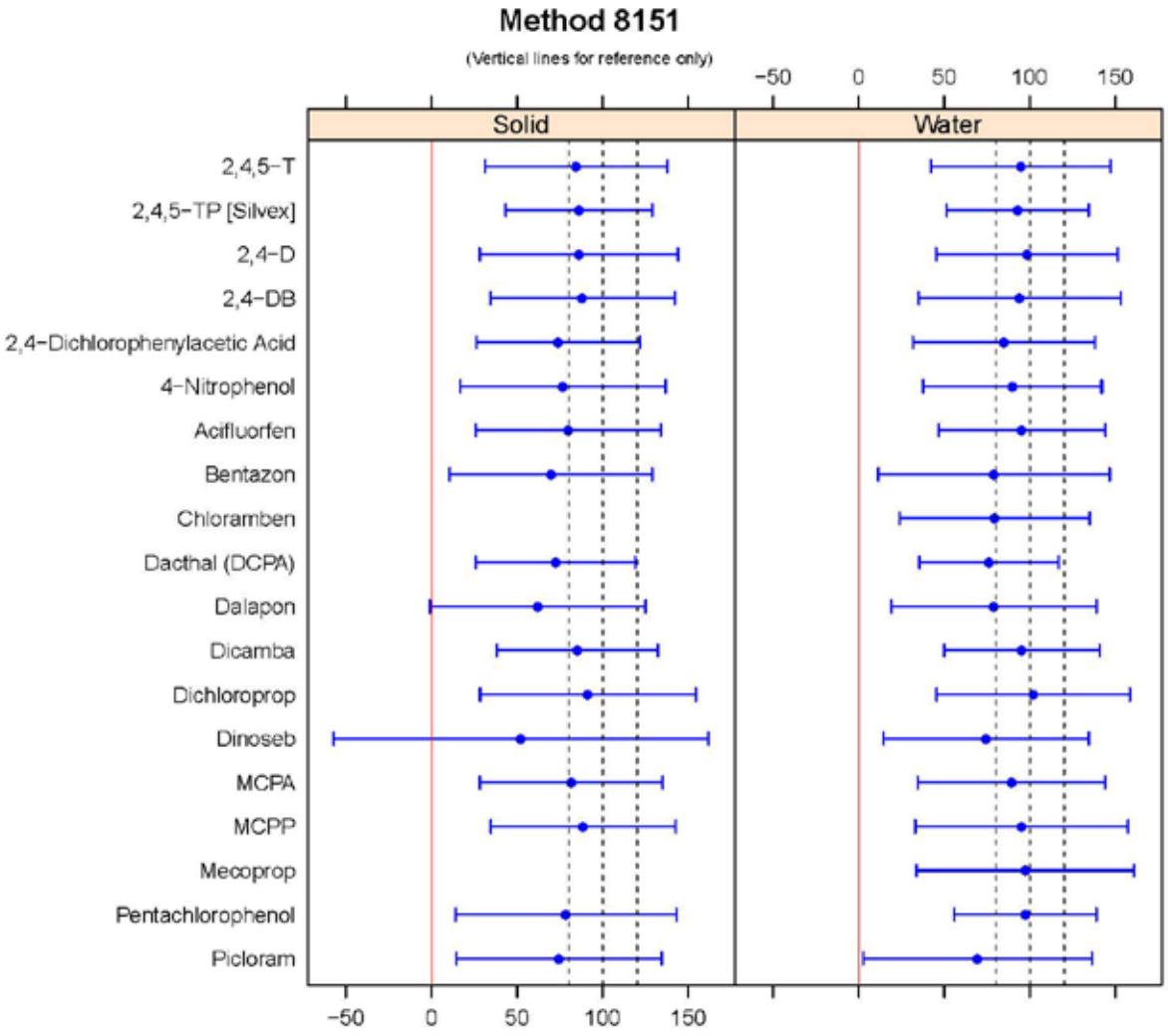

Method 8015(mod)
(Vertical lines for reference only)
Solid
Water
4-Bromofluorobenzene
Diesel Range Organics (DRO)
Gasoline Range Organics (GRO)
Motor Oil
Octacosane
o-Terphenyl
40
60
80
100
120
140

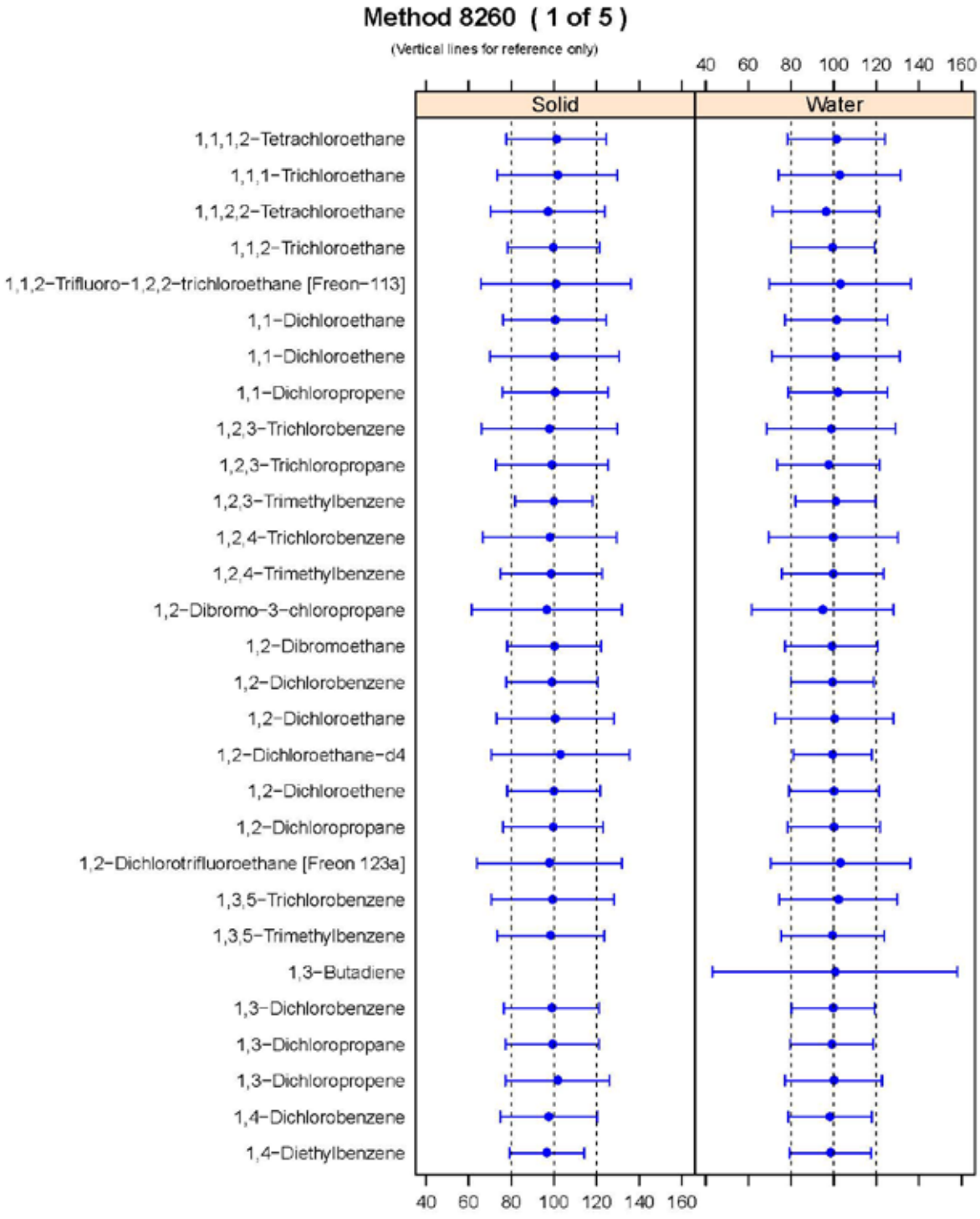

Method 8081
(Vertical lines for reference only)
Solid
Water
40
60
80
100
120
140
2,4'-DDT
2,4-DDD
2,4-DDE
4,4'-DDD
4,4'-DDE
4,4'-DDT
Aldrin
Chlordane
Dieldrin
Endosulfan I
Endosulfan II
Null
Endosulfan sulfate
Endrin
Endrin Ketone
Endrin aldehyde
Heptachlor
Heptachlor epoxide
Hexachlorobenzene
Methoxychlor
Mirex
Tetrachloro-m-xylene
Toxaphene
alpha-BHC
alpha-Chlordane
beta-BHC
delta-BHC
gamma-BHC [Lindane]
gamma-Chlordane

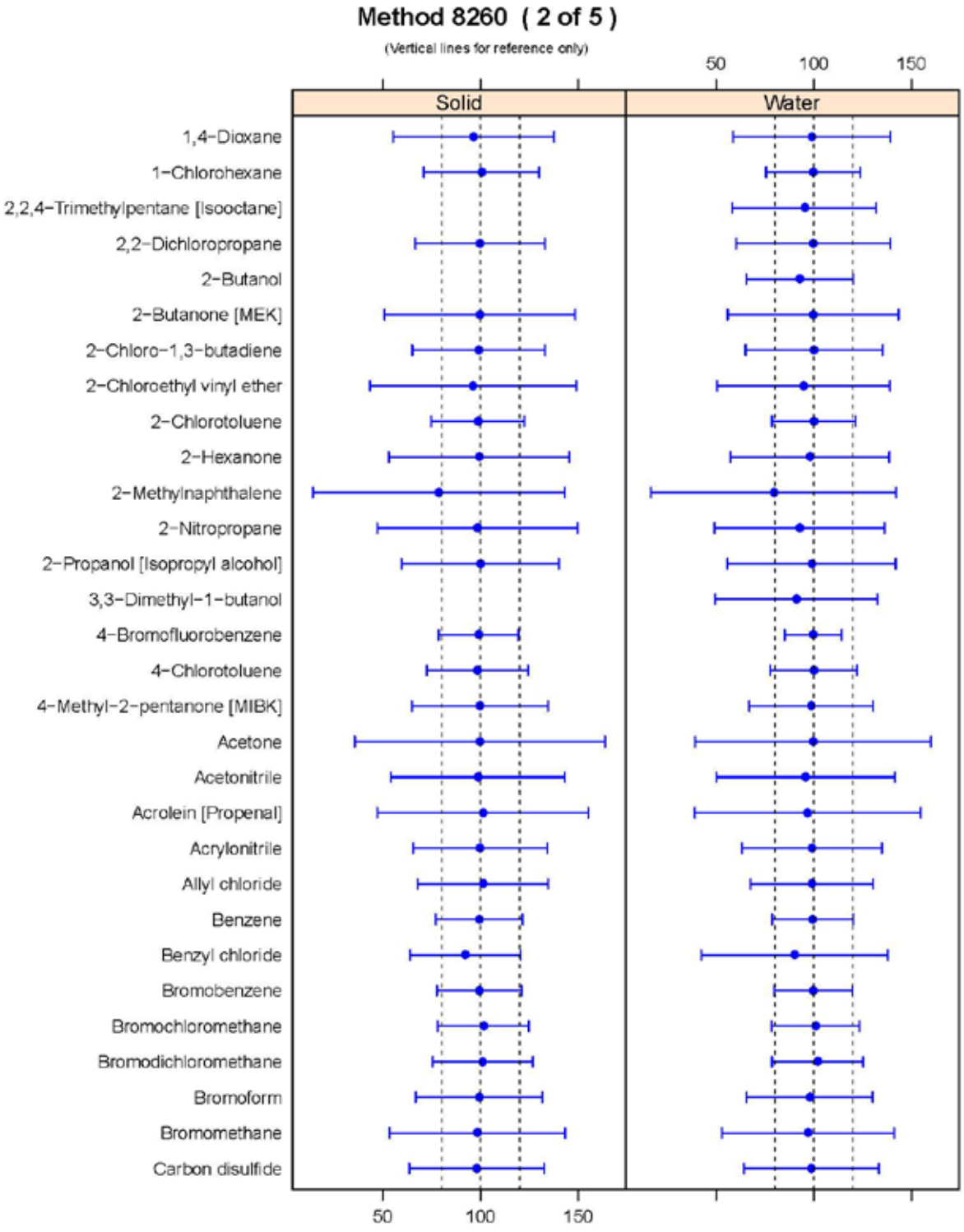

Method 8082
(Vertical lines for reference only)
Solid
Water
Aroclor 1016
Aroclor 1254
Aroclor 1260
Tetrachloro-m-xylene
50
100
50
100

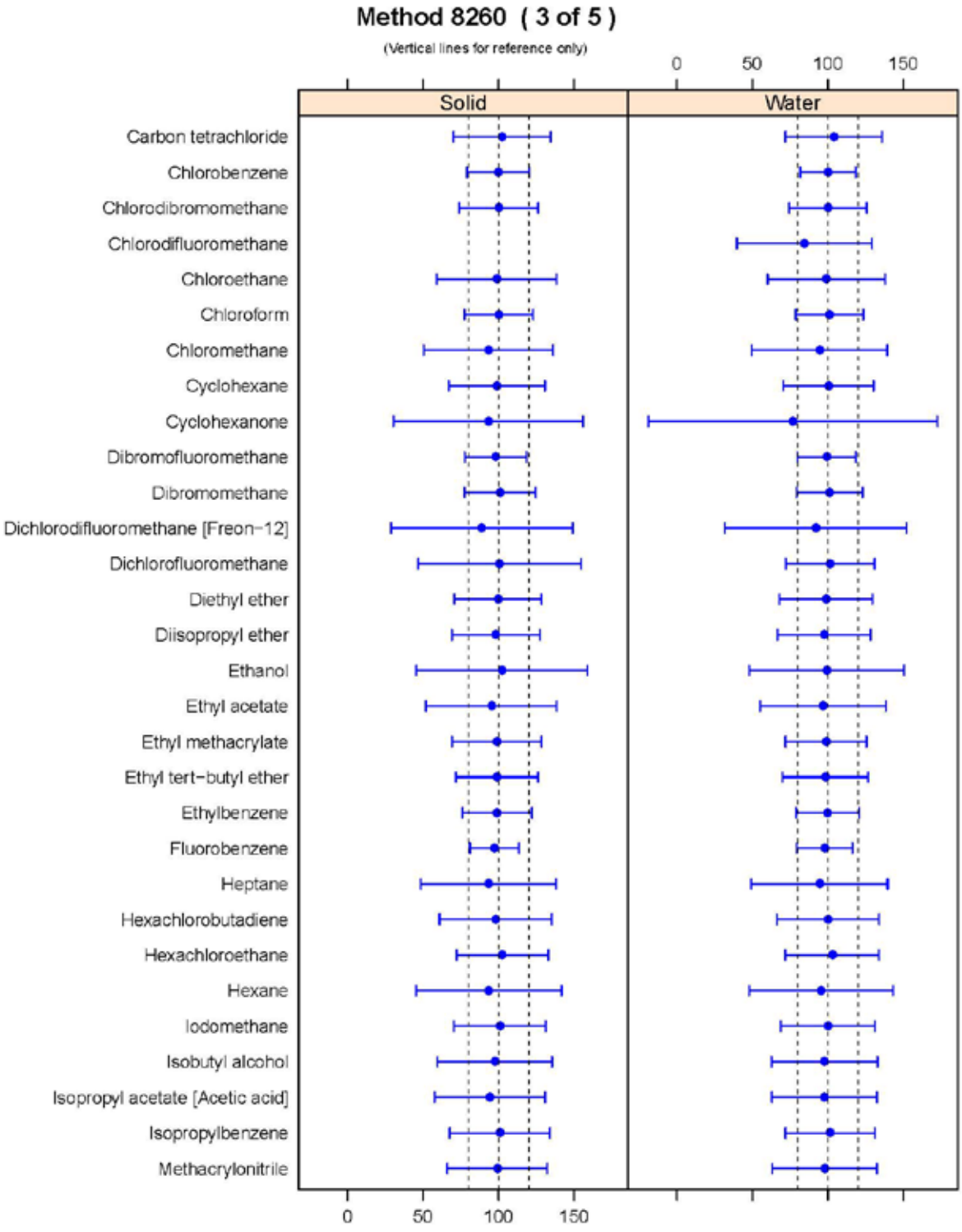

Method 8141 (1 of 2)
(Vertical lines for reference only)
Solid
Water
Atrazine
Azinphos-methyl
Bolstar [Sulprofos]
Carbophenothion
Chlorpyrifos
Coumaphos
Demeton
Demeton-O
Demeton-S
Diazinon
Dichlorvos [DDVP]
Dimethoate
Disulfoton
EPN
Ethion
Ethoprop
Fampphur
Fensulfothion
Fenthion
Malathion
Merphos
Methyl parathion
Mevinphos
Monocrotophos
Naled
O,O,O-Triethyl phosphorothioate
Parathion
Phorate
Propazine [Milogard]
-50
0
50
100
150
200

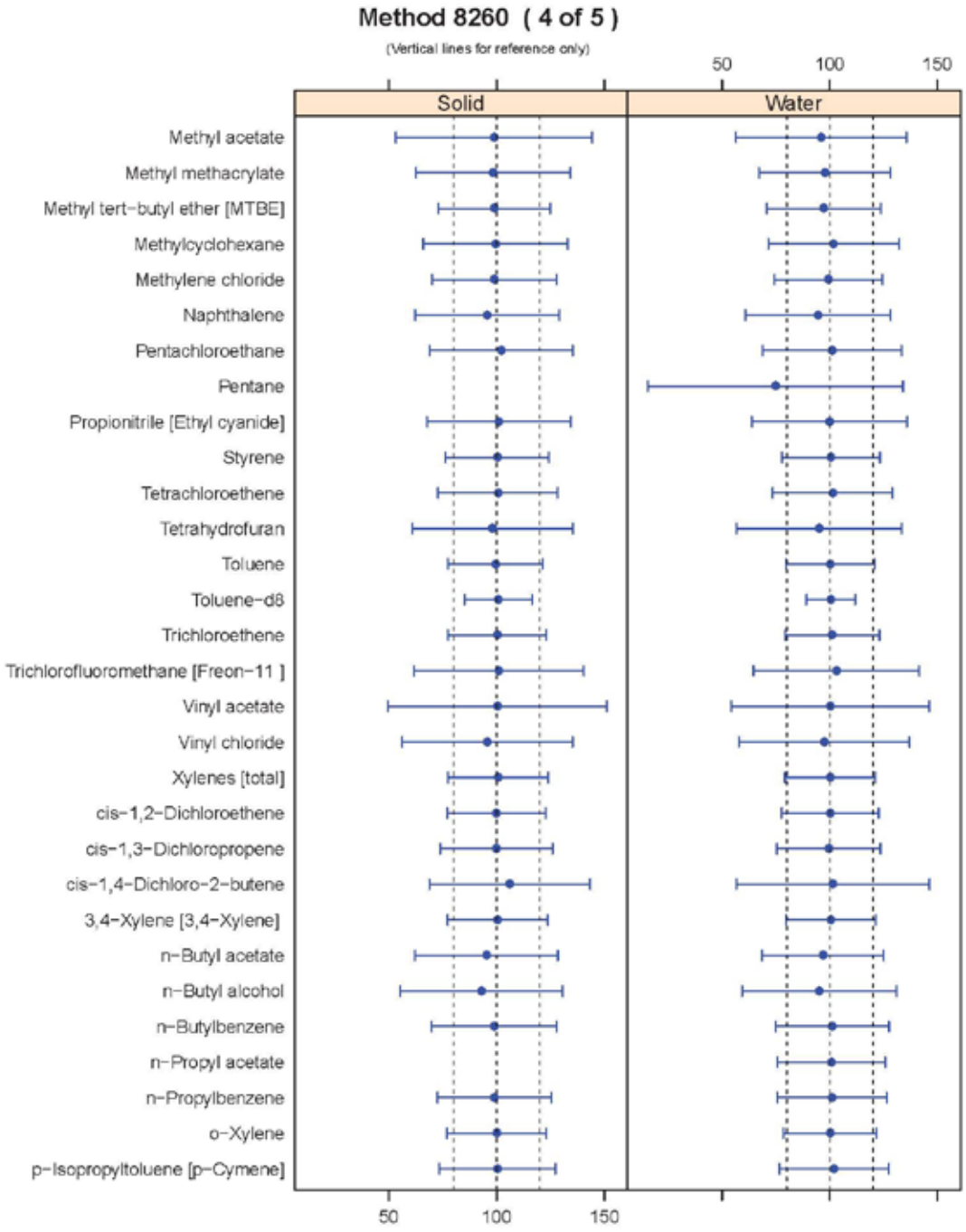

Method 8141 (2 of 2)
(Vertical lines for reference only)
Solid
Water
Ronnel
Simazine
Stirophos [Tetrachlorovinphos, Gardona]
Tetrachlorvinphos (stirophos)
Tetraethyl dithiopyrophosphate [Sulfotep]
Tetraethyl pyrophosphate [TEPP]
Thionazine
Tokuthion [Protothiofos]
Trichloronate
−50
0
50
100
150
200

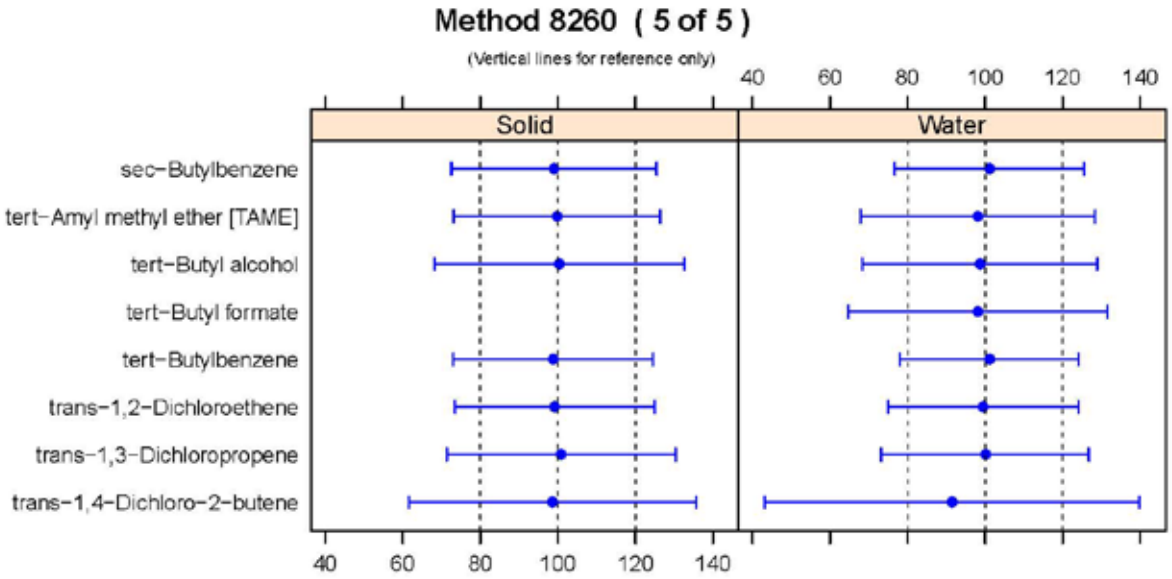

Method 8151
(Vertical lines for reference only)
Solid
Water
2,4,5-T
2,4,5-TP [Silvex]
2,4-D
2,4-DB
2,4-Dichlorophenylacetic Acid
4-Nitrophenol
Acifluorfen
Bentazon
Chloramben
Dacthal (DCPA)
Dalapon
Dicamba
Dichloroprop
Dinoseb
MCPA
MCPP
Mecoprop
Pentachlorophenol
Picloram
−50
0
50
100
150

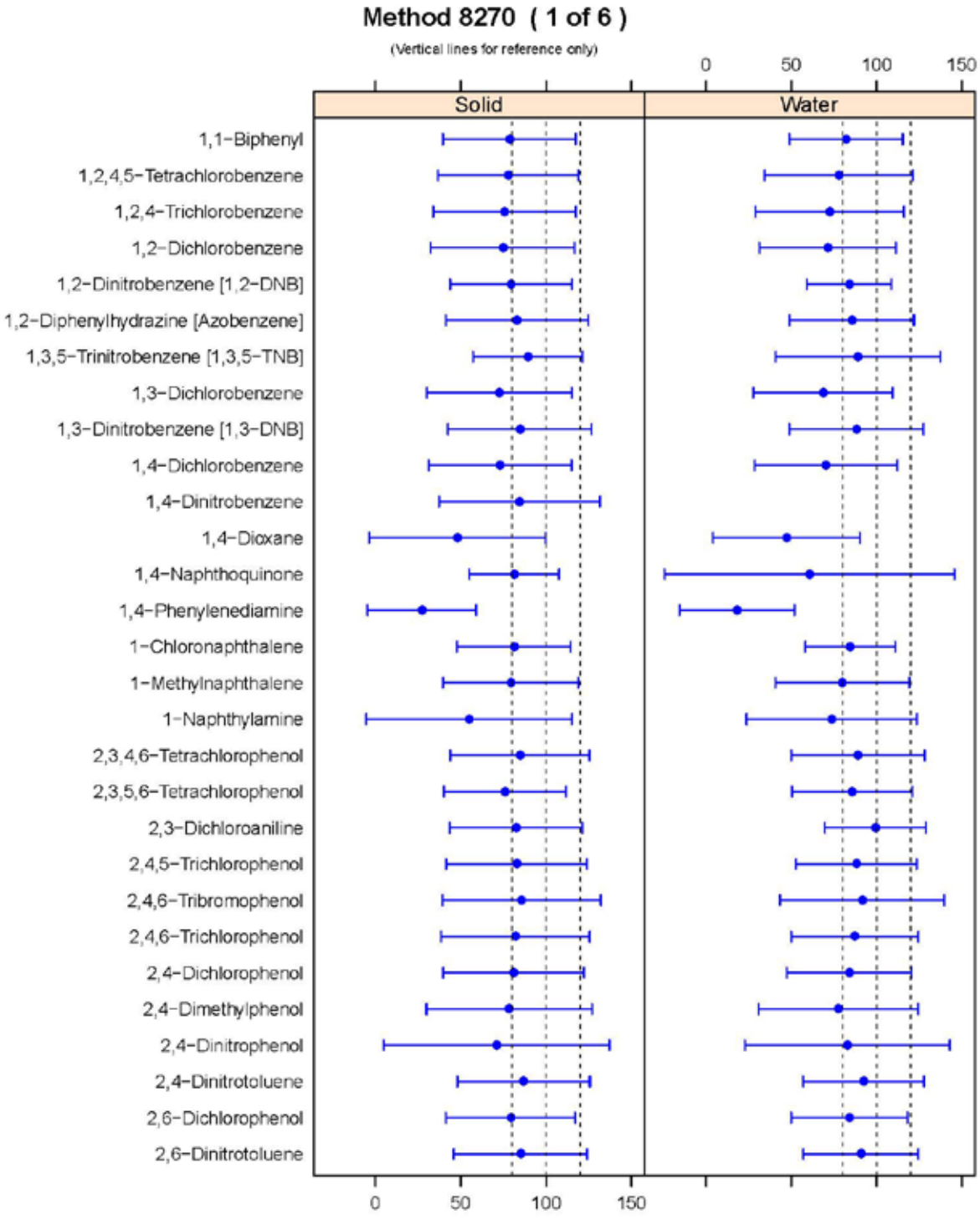

Method 8260 (1 of 5)
(Vertical lines for reference only)
40 60 80 100 120 140 160
Solid
Water
1,1,1,2-Tetrachloroethane
1,1,1-Trichloroethane
1,1,2,2-Tetrachloroethane
1,1,2-Trichloroethane
1,1,2-Trifluoro-1,2,2-trichloroethane [Freon-113]
1,1-Dichloroethane
1,1-Dichloroethene
1,1-Dichloropropene
1,2,3-Trichlorobenzene
1,2,3-Trichloropropane
1,2,3-Trimethylbenzene
1,2,4-Trichlorobenzene
1,2,4-Trimethylbenzene
1,2-Dibromo-3-chloropropane
1,2-Dibromoethane
1,2-Dichlorobenzene
1,2-Dichloroethane
1,2-Dichloroethane-d4
1,2-Dichloroethene
1,2-Dichloropropane
1,2-Dichlorotrifluoroethane [Freon 123a]
1,3,5-Trichlorobenzene
1,3,5-Trimethylbenzene
1,3-Butadiene
1,3-Dichlorobenzene
1,3-Dichloropropane
1,3-Dichloropropene
1,4-Dichlorobenzene
1,4-Diethylbenzene
40 60 80 100 120 140 160

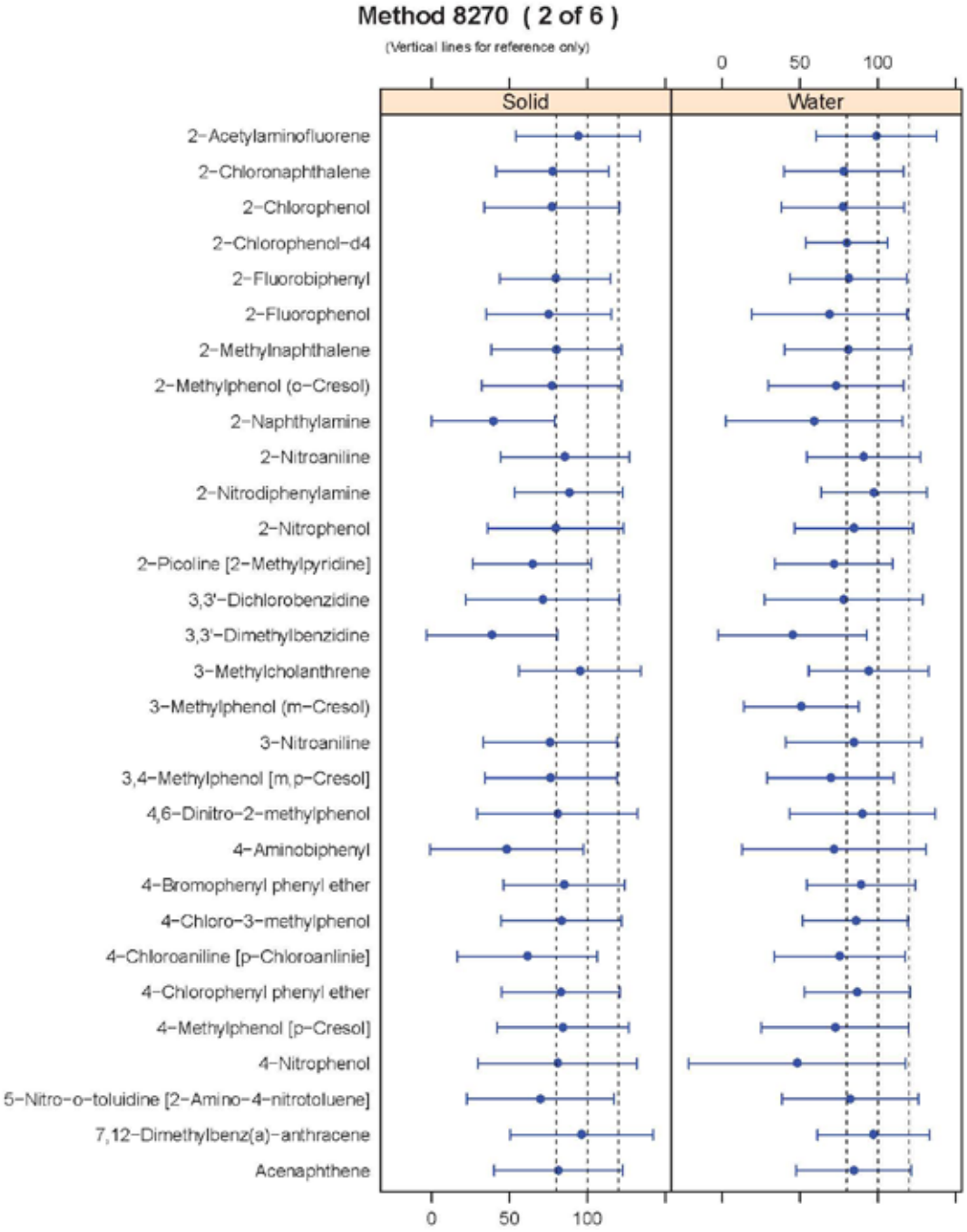

Method 8260 (2 of 5)
(Vertical lines for reference only)
Solid
Water
50
100
150
1,4-Dioxane
1-Chlorohexane
2,2,4-Trimethylpentane [Isooctane]
2,2-Dichloropropane
2-Butanol
2-Butanone [MEK]
2-Chloro-1,3-butadiene
2-Chloroethyl vinyl ether
2-Chlorotoluene
2-Hexanone
2-Methylnaphthalene
2-Nitropropane
2-Propanol [Isopropyl alcohol]
3,3-Dimethyl-1-butanol
4-Bromofluorobenzene
4-Chlorotoluene
4-Methyl-2-pentanone [MIBK]
Acetone
Acetonitrile
Acrolein [Propenal]
Acrylonitrile
Allyl chloride
Benzene
Benzyl chloride
Bromobenzene
Bromochloromethane
Bromodichloromethane
Bromoform
Bromomethane
Carbon disulfide

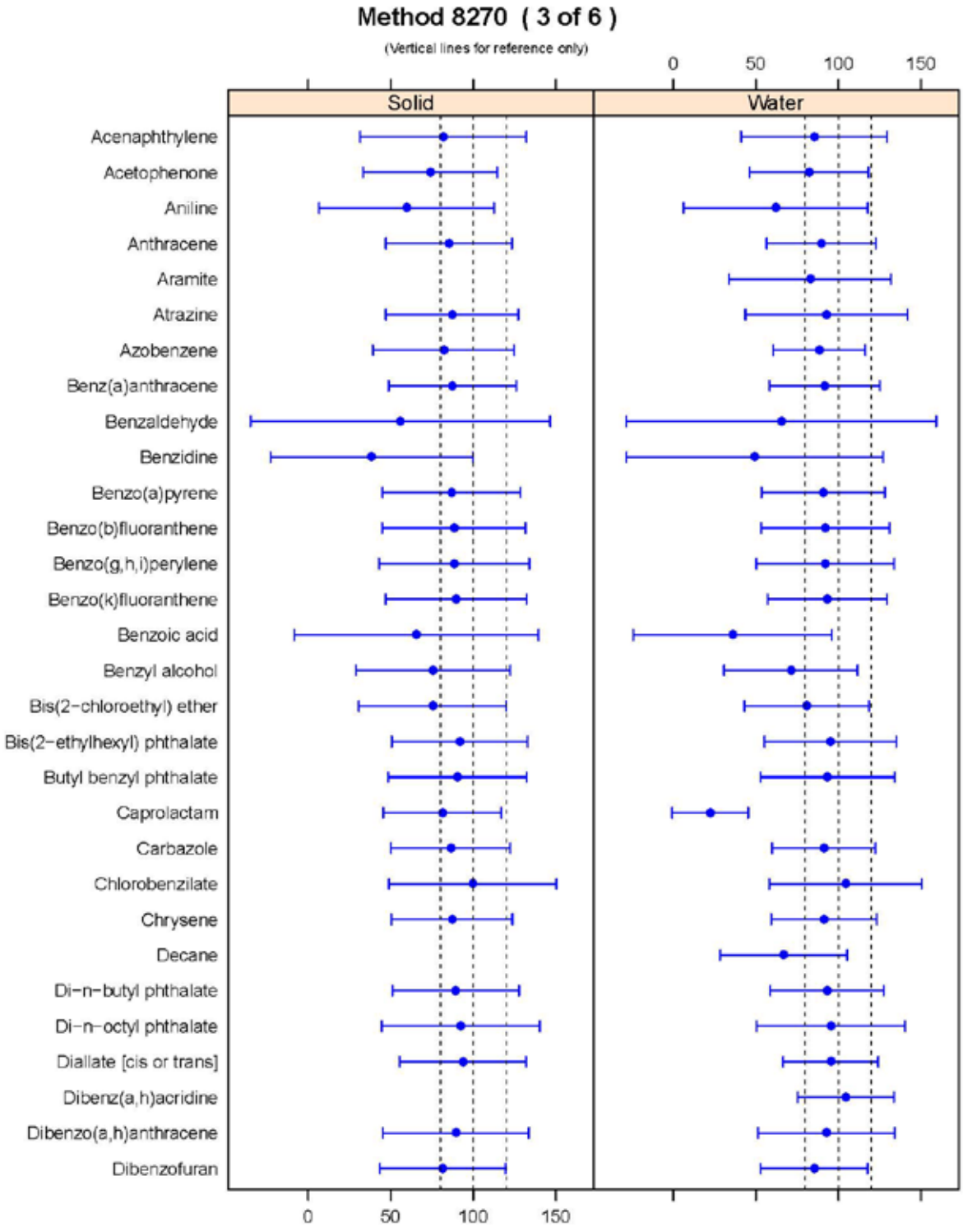

Method 8260 (3 of 5)
(Vertical lines for reference only)
Solid
Water
0
50
100
150
Carbon tetrachloride
Chlorobenzene
Chlorodibromomethane
Chlorodifluoromethane
Chloroethane
Chloroform
Chloromethane
Cyclohexane
Cyclohexanone
Dibromofluoromethane
Dibromomethane
Dichlorodifluoromethane [Freon−12]
Dichlorofluoromethane
Diethyl ether
Diisopropyl ether
Ethanol
Ethyl acetate
Ethyl methacrylate
Ethyl tert−butyl ether
Ethylbenzene
Fluorobenzene
Heptane
Hexachlorobutadiene
Hexachloroethane
Hexane
Iodomethane
Isobutyl alcohol
Isopropyl acetate [Acetic acid]
Isopropylbenzene
Methacrylonitrile

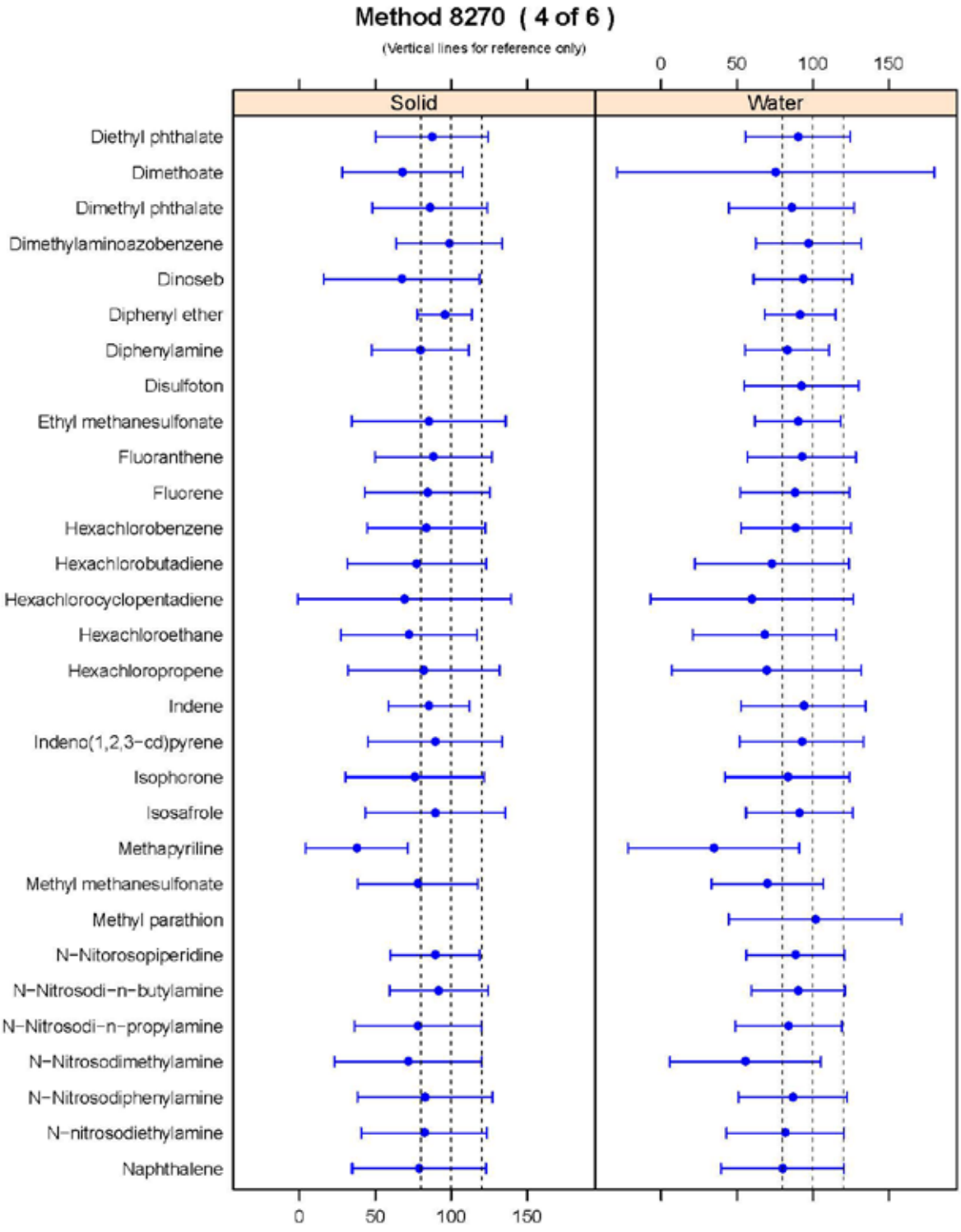

Method 8260 (4 of 5)
(Vertical lines for reference only)
Solid
Water
50
100
150
Methyl acetate
Methyl methacrylate
Methyl tert-butyl ether [MTBE]
Methylcyclohexane
Methylene chloride
Naphthalene
Pentachloroethane
Pentane
Propionitrile [Ethyl cyanide]
Styrene
Tetrachloroethene
Tetrahydrofuran
Toluene
Toluene-d8
Trichloroethene
Trichlorofluoromethane [Freon-11]
Vinyl acetate
Vinyl chloride
Xylenes [total]
cis-1,2-Dichloroethene
cis-1,3-Dichloropropene
cis-1,4-Dichloro-2-butene
3,4-Xylene [3,4-Xylene]
n-Butyl acetate
n-Butyl alcohol
n-Butylbenzene
n-Propyl acetate
n-Propylbenzene
o-Xylene
p-Isopropyltoluene [p-Cymene]

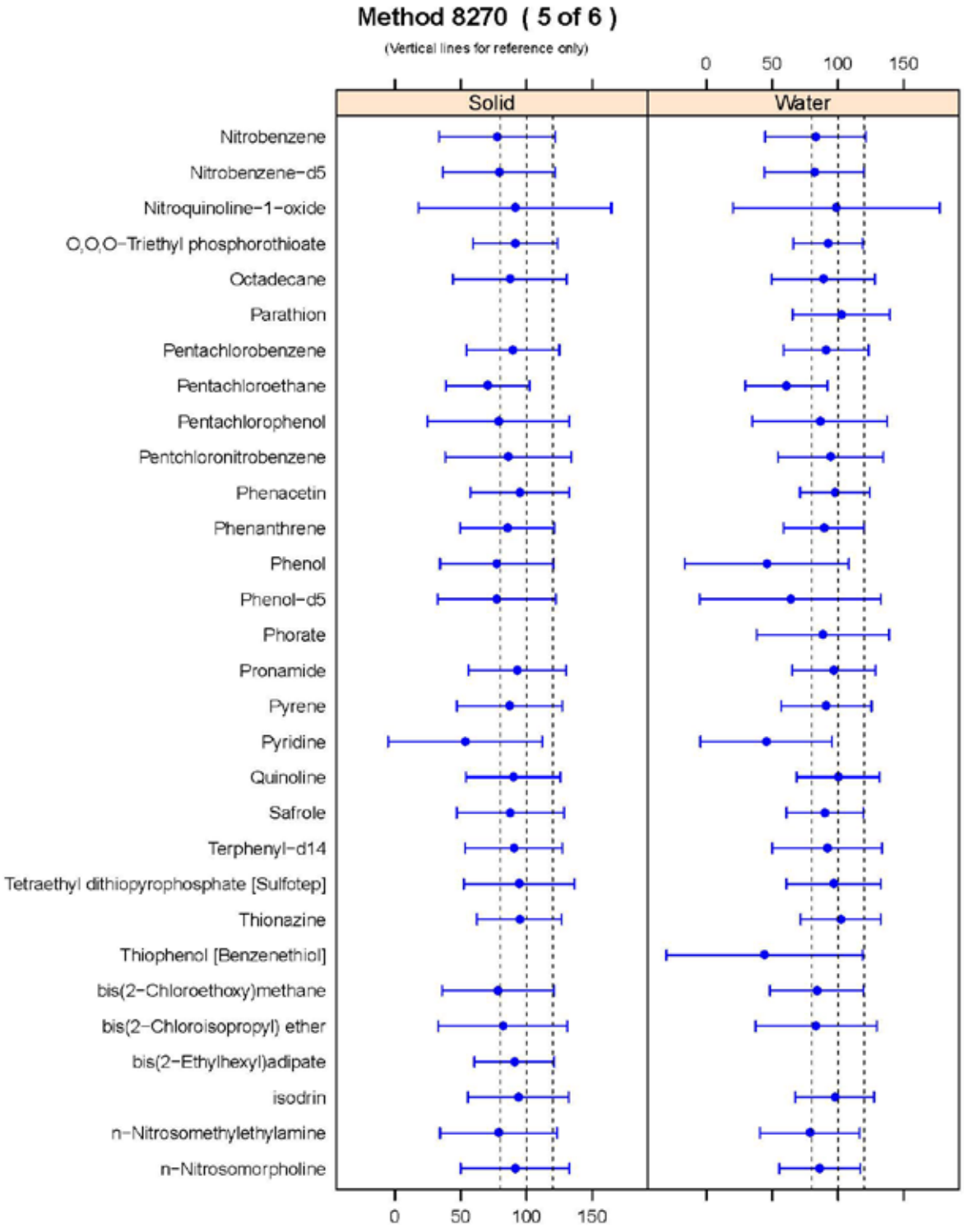

Method 8260 (5 of 5)
(Vertical lines for reference only)
Solid
Water
sec−Butylbenzene
tert−Amyl methyl ether [TAME]
tert−Butyl alcohol
tert−Butyl formate
tert−Butylbenzene
trans−1,2−Dichloroethene
trans−1,3−Dichloropropene
trans−1,4−Dichloro−2−butene
40
60
80
100
120
140

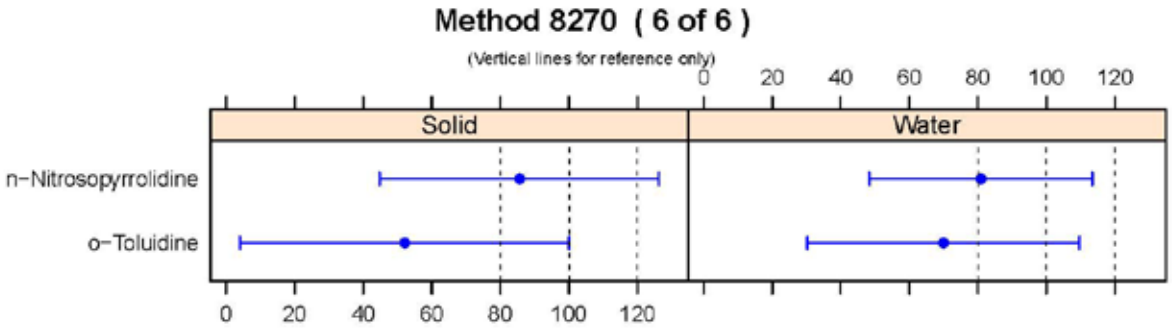

Method 8270 (1 of 6)
(Vertical lines for reference only)
Solid
Water
0
50
100
150
1,1-Biphenyl
1,2,4,5-Tetrachlorobenzene
1,2,4-Trichlorobenzene
1,2-Dichlorobenzene
1,2-Dinitrobenzene [1,2-DNB]
1,2-Diphenylhydrazine [Azobenzene]
1,3,5-Trinitrobenzene [1,3,5-TNB]
1,3-Dichlorobenzene
1,3-Dinitrobenzene [1,3-DNB]
1,4-Dichlorobenzene
1,4-Dinitrobenzene
1,4-Dioxane
1,4-Naphthoquinone
1,4-Phenylenediamine
1-Chloronaphthalene
1-Methylnaphthalene
1-Naphthylamine
2,3,4,6-Tetrachlorophenol
2,3,5,6-Tetrachlorophenol
2,3-Dichloroaniline
2,4,5-Trichlorophenol
2,4,6-Tribromophenol
2,4,6-Trichlorophenol
2,4-Dichlorophenol
2,4-Dimethylphenol
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dichlorophenol
2,6-Dinitrotoluene

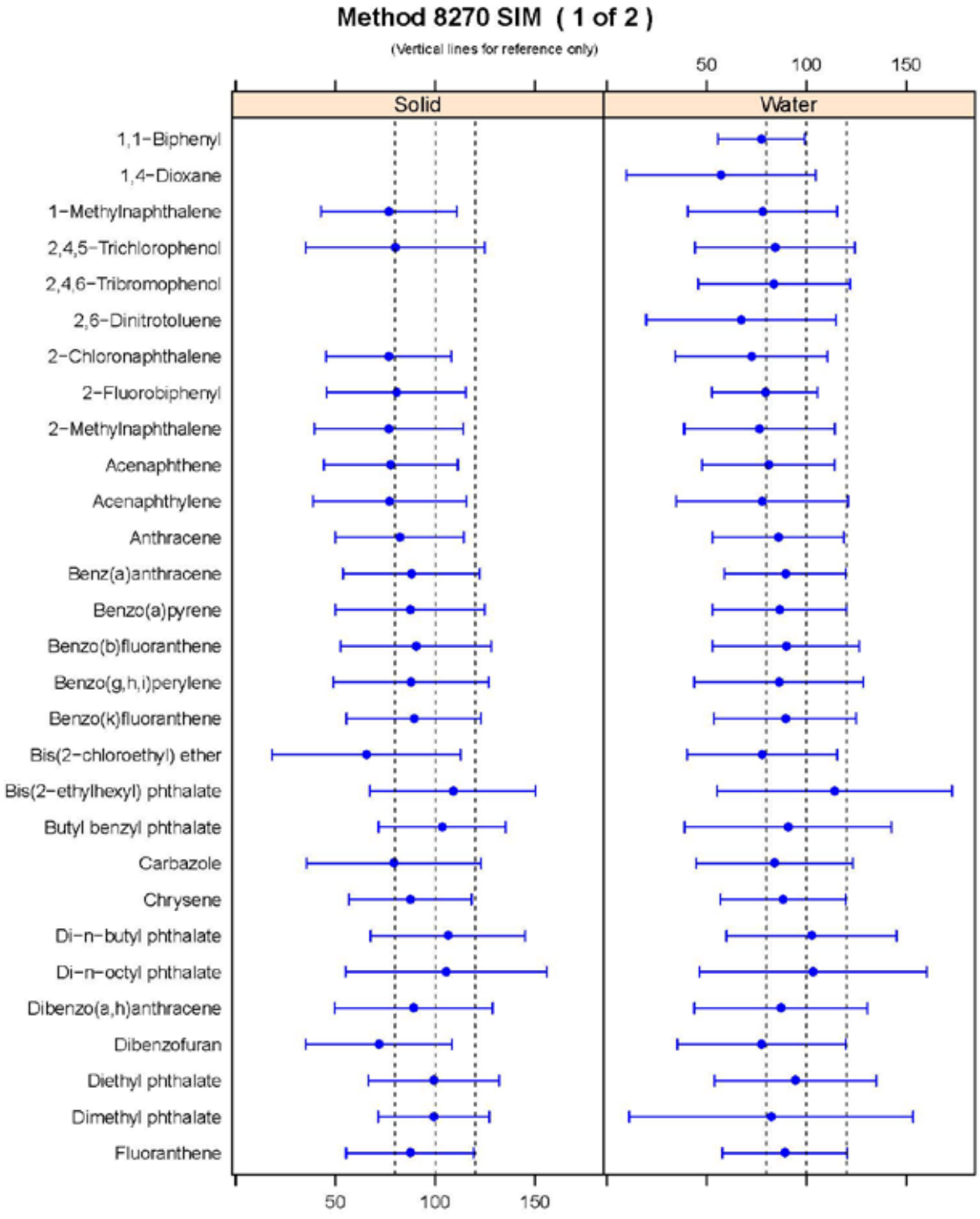

Method 8270 (2 of 6)
(Vertical lines for reference only)
Solid
Water
0
50
100
2-Acetylaminofluorene
2-Chloronaphthalene
2-Chlorophenol
2-Chlorophenol-d4
2-Fluorobiphenyl
2-Fluorophenol
2-Methylnaphthalene
2-Methylphenol (o-Cresol)
2-Naphthylamine
2-Nitroaniline
2-Nitrodiphenylamine
2-Nitrophenol
2-Picoline [2-Methylpyridine]
3,3'-Dichlorobenzidine
3,3'-Dimethylbenzidine
3-Methylcholanthrene
3-Methylphenol (m-Cresol)
3-Nitroaniline
3,4-Methylphenol [m,p-Cresol]
4,6-Dinitro-2-methylphenol
4-Aminobiphenyl
4-Bromophenyl phenyl ether
4-Chloro-3-methylphenol
4-Chloroaniline [p-Chloroanlinie]
4-Chlorophenyl phenyl ether
4-Methylphenol [p-Cresol]
4-Nitrophenol
5-Nitro-o-toluidine [2-Amino-4-nitrotoluene]
7,12-Dimethylbenz(a)-anthracene
Acenaphthene

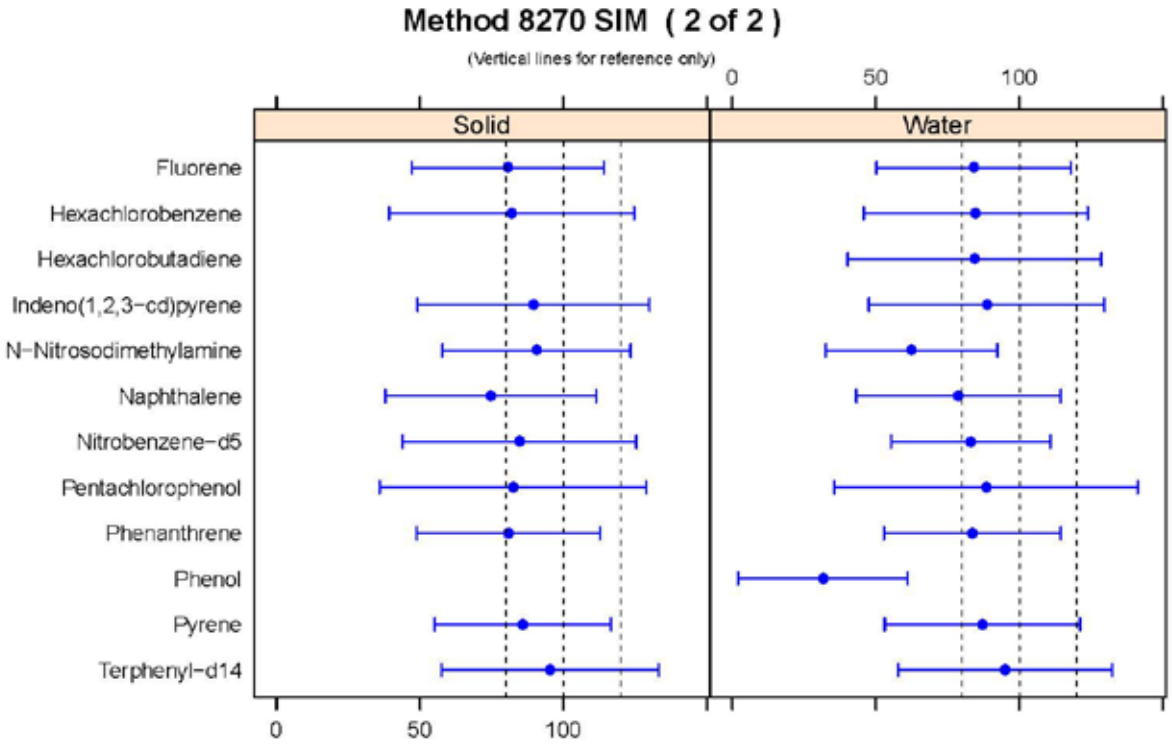

Method 8270 (3 of 6)
(Vertical lines for reference only)
Solid
Water
0
50
100
150
Acenaphthylene
Acetophenone
Aniline
Anthracene
Aramite
Atrazine
Azobenzene
Benz(a)anthracene
Benzaldehyde
Benzidine
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(g,h,i)perylene
Benzo(k)fluoranthene
Benzoic acid
Benzyl alcohol
Bis(2-chloroethyl) ether
Bis(2-ethylhexyl) phthalate
Butyl benzyl phthalate
Caprolactam
Carbazole
Chlorobenzilate
Chrysene
Decane
Di-n-butyl phthalate
Di-n-octyl phthalate
Diallate [cis or trans]
Dibenz(a,h)acridine
Dibenzo(a,h)anthracene
Dibenzofuran

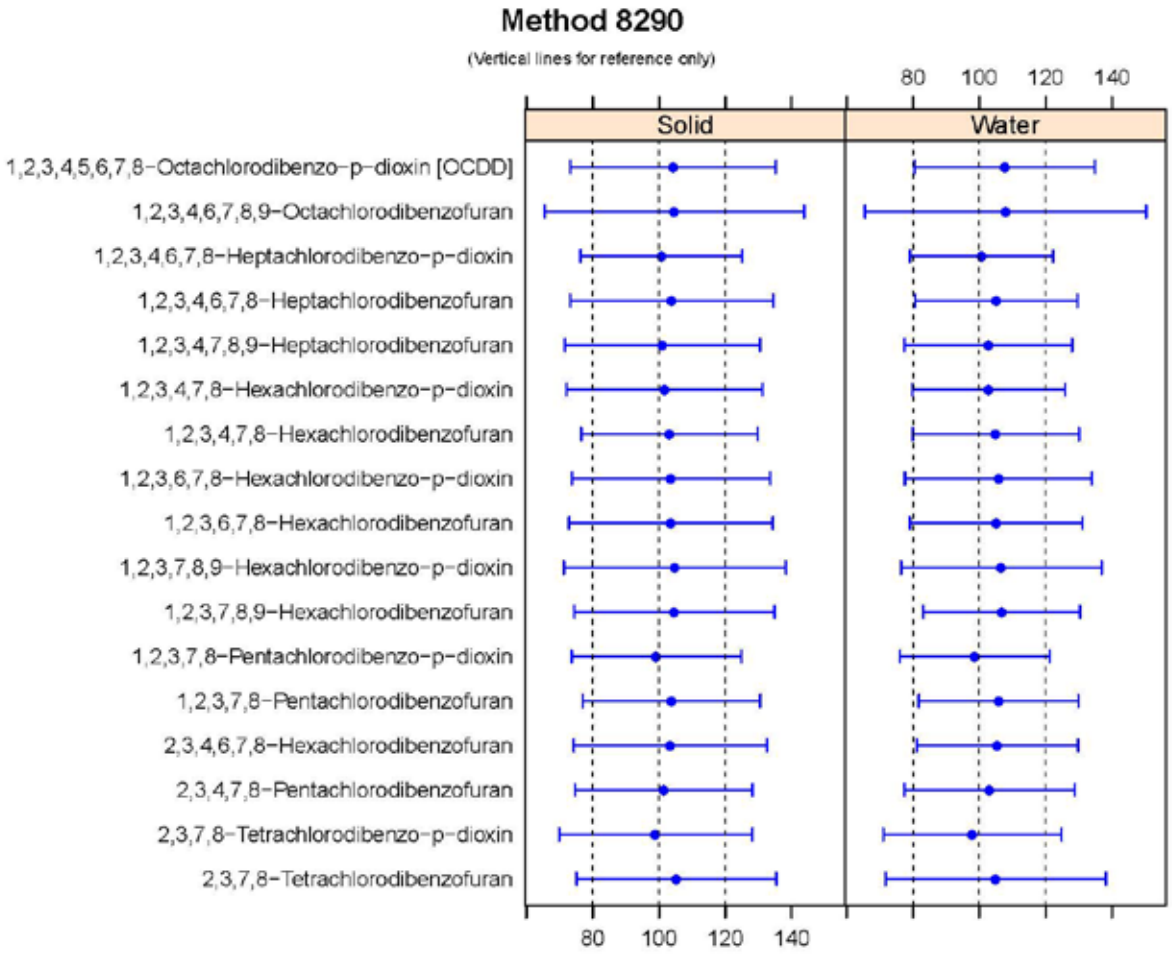

Method 8270 (4 of 6)
(Vertical lines for reference only)
Solid
Water
0
50
100
150
Diethyl phthalate
Dimethoate
Dimethyl phthalate
Dimethylaminoazobenzene
Dinoseb
Diphenyl ether
Diphenylamine
Disulfoton
Ethyl methanesulfonate
Fluoranthene
Fluorene
Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclopentadiene
Hexachloroethane
Hexachloropropene
Indene
Indeno(1,2,3-cd)pyrene
Isophorone
Isosafrole
Methapyriline
Methyl methanesulfonate
Methyl parathion
N-Nitorosopiperidine
N-Nitrosodi-n-butylamine
N-Nitrosodi-n-propylamine
N-Nitrosodimethylamine
N-Nitrosodiphenylamine
N-nitrosodiethylamine
Naphthalene

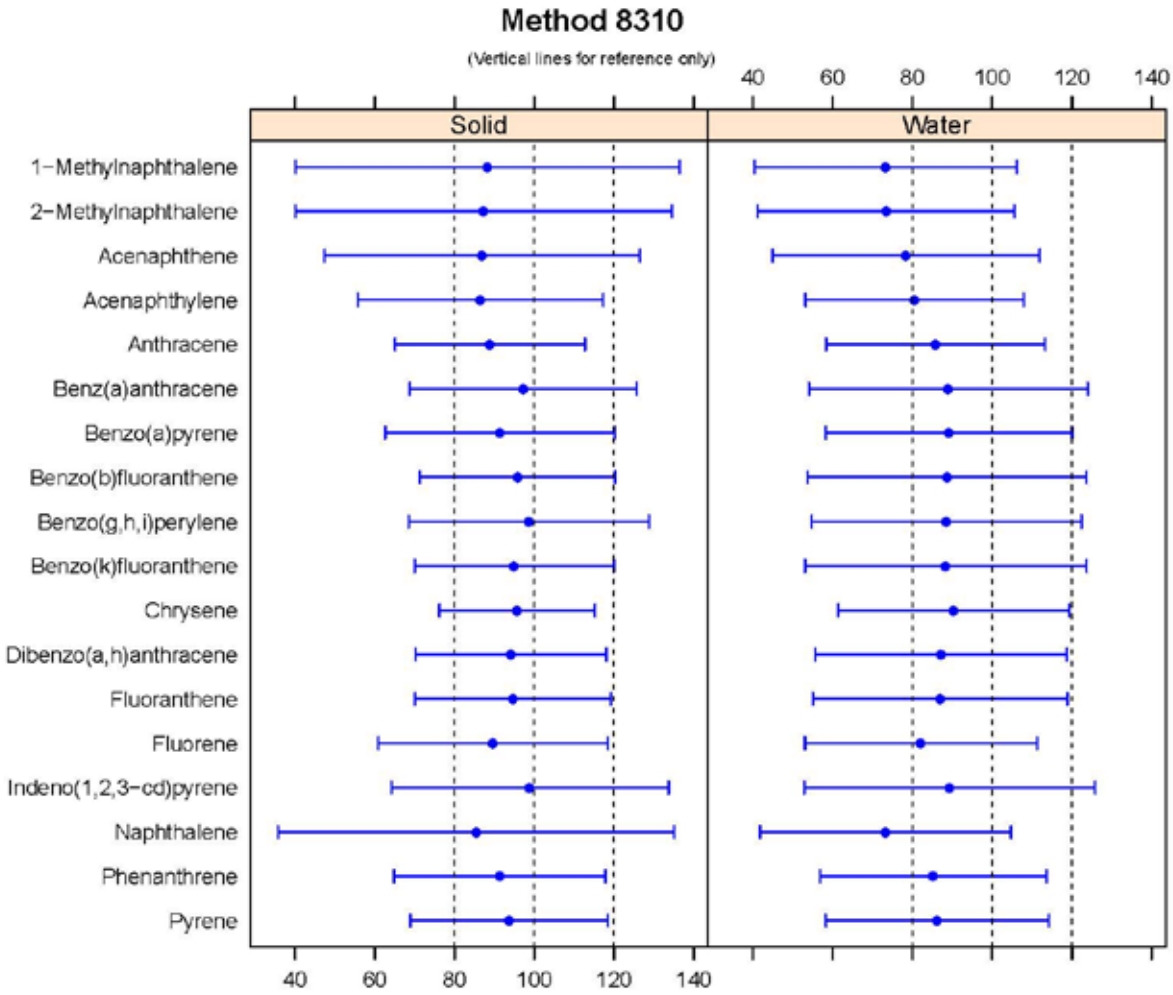

Method 8270 (5 of 6)
(Vertical lines for reference only)
Solid
Water
0
50
100
150
Nitrobenzene
Nitrobenzene-d5
Nitroquinoline-1-oxide
O,O,O-Triethyl phosphorothioate
Octadecane
Parathion
Pentachlorobenzene
Pentachloroethane
Pentachlorophenol
Pentchloronitrobenzene
Phenacetin
Phenanthrene
Phenol
Phenol-d5
Phorate
Pronamide
Pyrene
Pyridine
Quinoline
Safrole
Terphenyl-d14
Tetraethyl dithiopyrophosphate [Sulfotep]
Thionazine
Thiophenol [Benzenethiol]
bis(2-Chloroethoxy)methane
bis(2-Chloroisopropyl) ether
bis(2-Ethylhexyl)adipate
isodrin
n-Nitrosomethylethylamine
n-Nitrosomorpholine

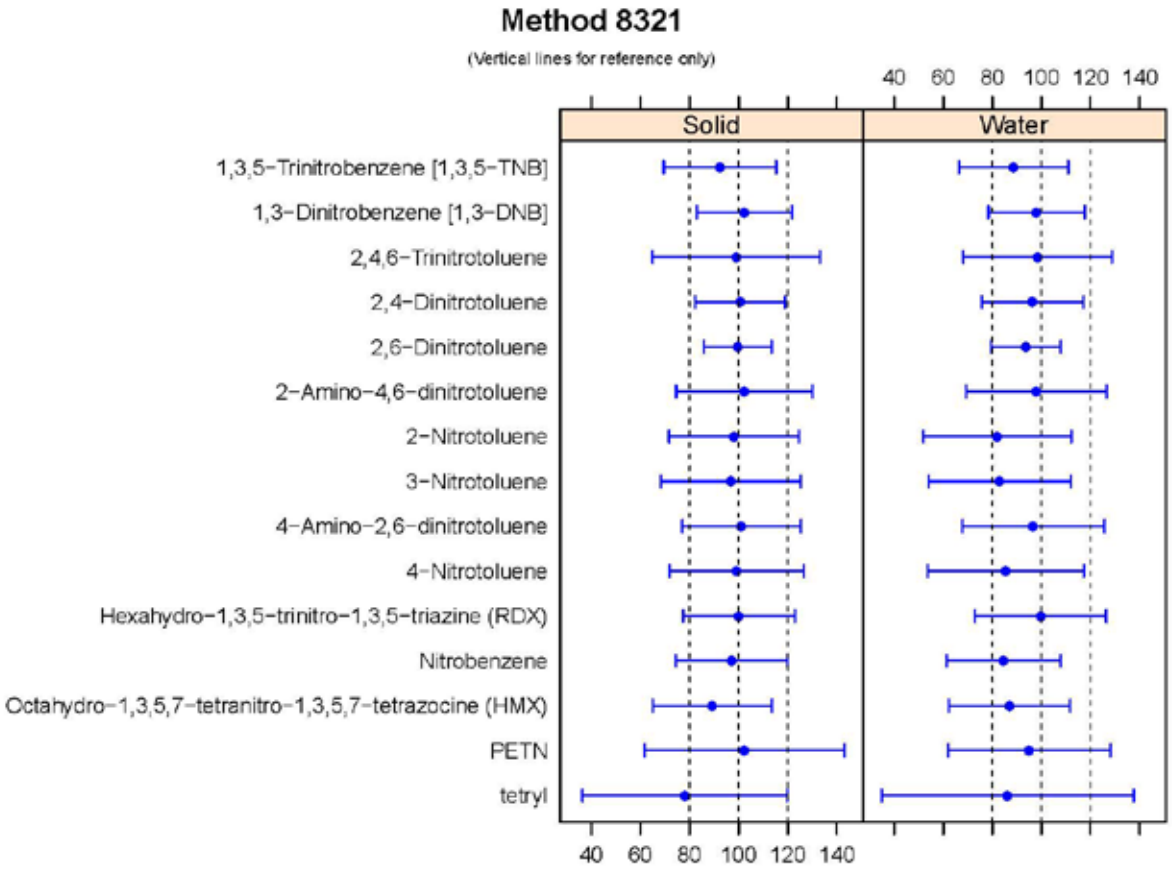

Method 8270 (6 of 6)
(Vertical lines for reference only)
Solid
Water
n−Nitrosopyrrolidine
o−Toluidine
0
20
40
60
80
100
120

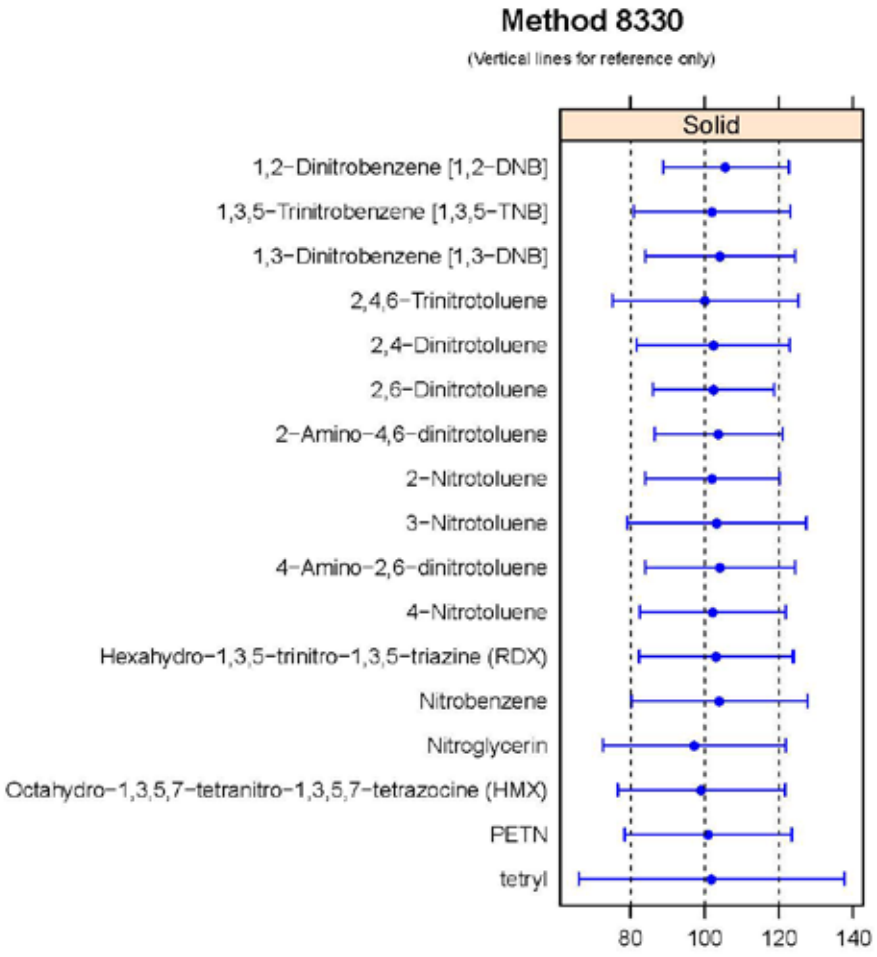

Method 8270 SIM (1 of 2)
(Vertical lines for reference only)
Solid
Water
50
100
150
1,1-Biphenyl
1,4-Dioxane
1-Methylnaphthalene
2,4,5-Trichlorophenol
2,4,6-Tribromophenol
2,6-Dinitrotoluene
2-Chloronaphthalene
2-Fluorobiphenyl
2-Methylnaphthalene
Acenaphthene
Acenaphthylene
Anthracene
Benz(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(g,h,i)perylene
Benzo(k)fluoranthene
Bis(2-chloroethyl) ether
Bis(2-ethylhexyl) phthalate
Butyl benzyl phthalate
Carbazole
Chrysene
Di-n-butyl phthalate
Di-n-octyl phthalate
Dibenzo(a,h)anthracene
Dibenzofuran
Diethyl phthalate
Dimethyl phthalate
Fluoranthene

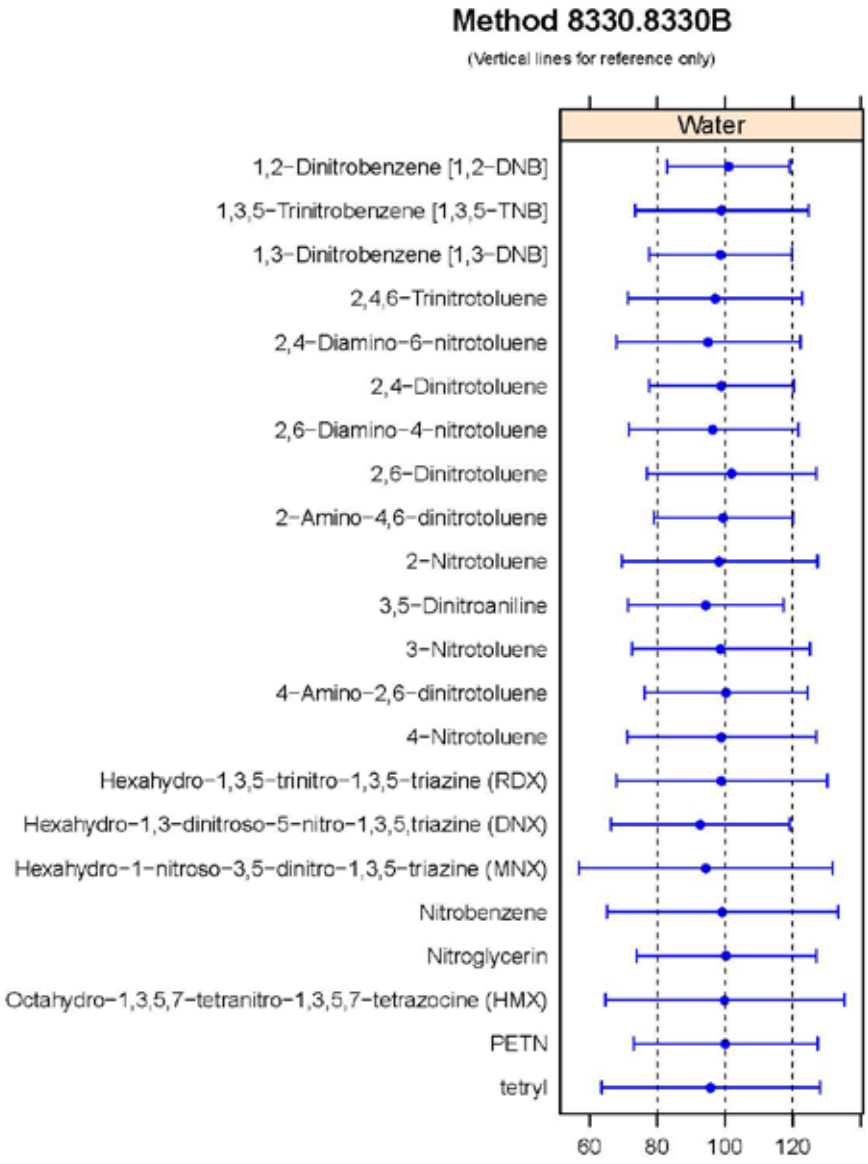

Method 8270 SIM (2 of 2)
(Vertical lines for reference only)
Solid
Water
Fluorene
Hexachlorobenzene
Hexachlorobutadiene
Indeno(1,2,3-cd)pyrene
N-Nitrosodimethylamine
Naphthalene
Nitrobenzene-d5
Pentachlorophenol
Phenanthrene
Phenol
Pyrene
Terphenyl-d14
0
50
100

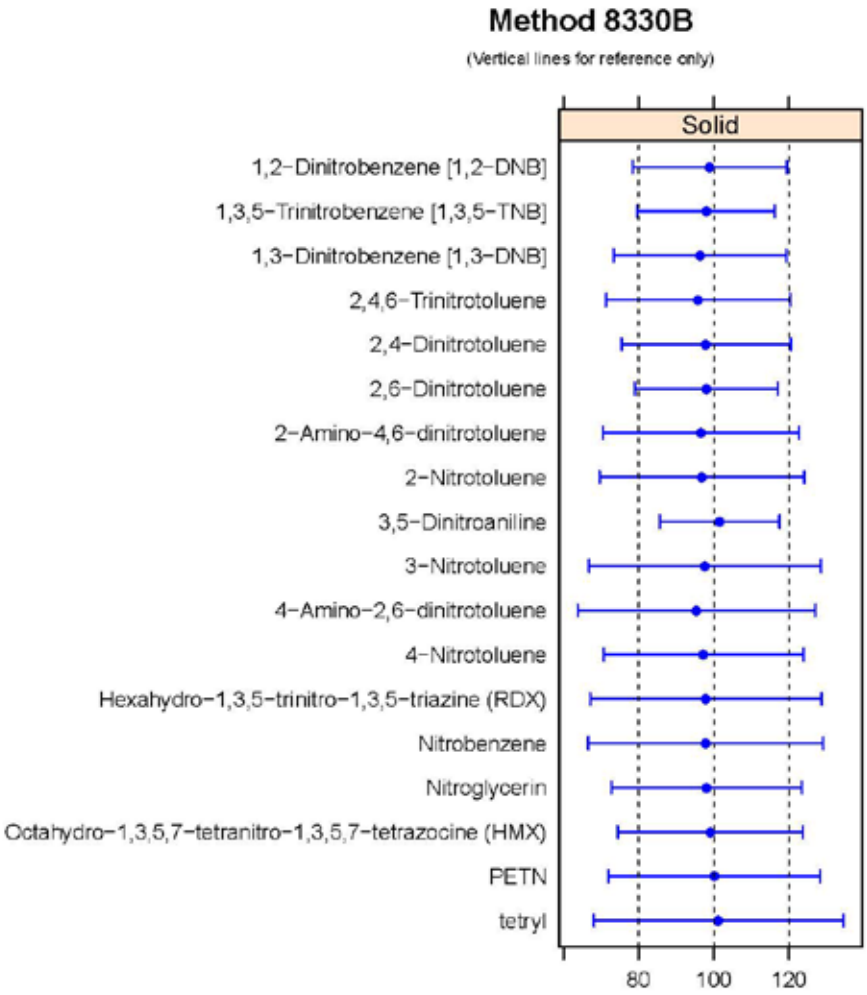

Method 8290
(Vertical lines for reference only)
Solid
Water
80
100
120
140
1,2,3,4,5,6,7,8-Octachlorodibenzo-p-dioxin [OCDD]
1,2,3,4,6,7,8,9-Octachlorodibenzofuran
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin
1,2,3,4,6,7,8-Heptachlorodibenzofuran
1,2,3,4,7,8,9-Heptachlorodibenzofuran
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin
1,2,3,4,7,8-Hexachlorodibenzofuran
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin
1,2,3,6,7,8-Hexachlorodibenzofuran
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin
1,2,3,7,8,9-Hexachlorodibenzofuran
1,2,3,7,8-Pentachlorodibenzo-p-dioxin
1,2,3,7,8-Pentachlorodibenzofuran
2,3,4,6,7,8-Hexachlorodibenzofuran
2,3,4,7,8-Pentachlorodibenzofuran
2,3,7,8-Tetrachlorodibenzo-p-dioxin
2,3,7,8-Tetrachlorodibenzofuran

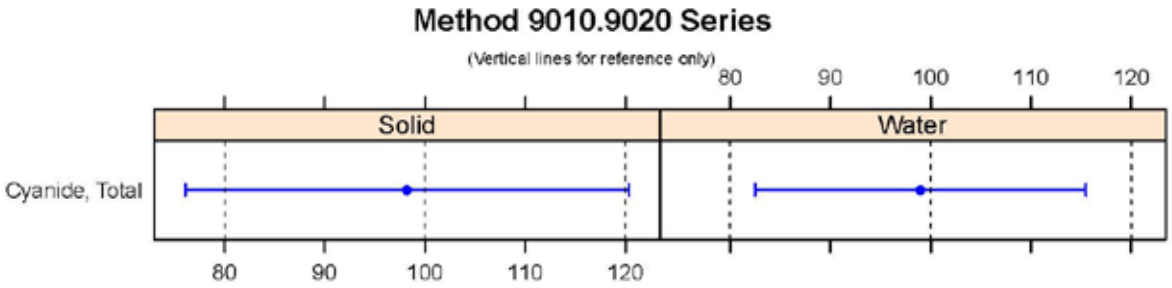

Method 8310
(Vertical lines for reference only)
Solid
Water
1−Methylnaphthalene
2−Methylnaphthalene
Acenaphthene
Acenaphthylene
Anthracene
Benz(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(g,h,i)perylene
Benzo(k)fluoranthene
Chrysene
Dibenzo(a,h)anthracene
Fluoranthene
Fluorene
Indeno(1,2,3−cd)pyrene
Naphthalene
Phenanthrene
Pyrene
40
60
80
100
120
140

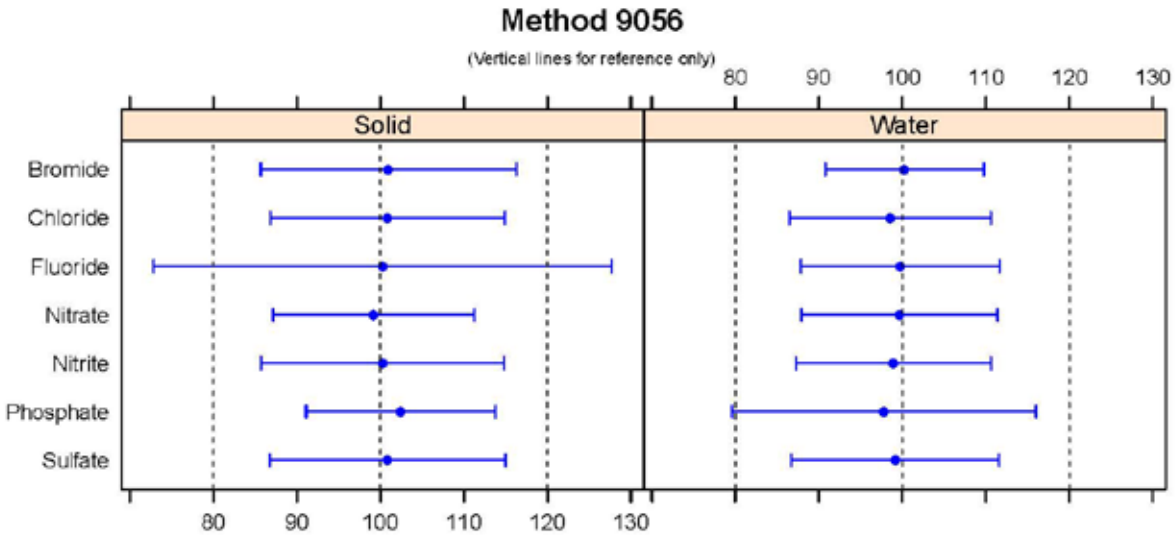

Method 8321
(Vertical lines for reference only)
Solid
Water
40
60
80
100
120
140
1,3,5-Trinitrobenzene [1,3,5-TNB]
1,3-Dinitrobenzene [1,3-DNB]
2,4,6-Trinitrotoluene
2,4-Dinitrotoluene
2,6-Dinitrotoluene
2-Amino-4,6-dinitrotoluene
2-Nitrotoluene
3-Nitrotoluene
4-Amino-2,6-dinitrotoluene
4-Nitrotoluene
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)
Nitrobenzene
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)
PETN
tetryl

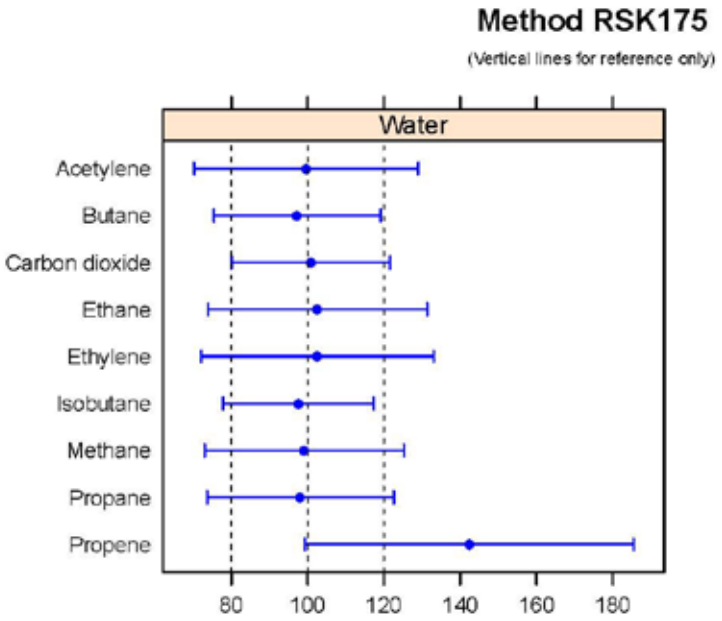

Method 8330
(Vertical lines for reference only)
Solid
1,2-Dinitrobenzene [1,2-DNB]
1,3,5-Trinitrobenzene [1,3,5-TNB]
1,3-Dinitrobenzene [1,3-DNB]
2,4,6-Trinitrotoluene
2,4-Dinitrotoluene
2,6-Dinitrotoluene
2-Amino-4,6-dinitrotoluene
2-Nitrotoluene
3-Nitrotoluene
4-Amino-2,6-dinitrotoluene
4-Nitrotoluene
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)
Nitrobenzene
Nitroglycerin
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)
PETN
tetryl
80
100
120
140

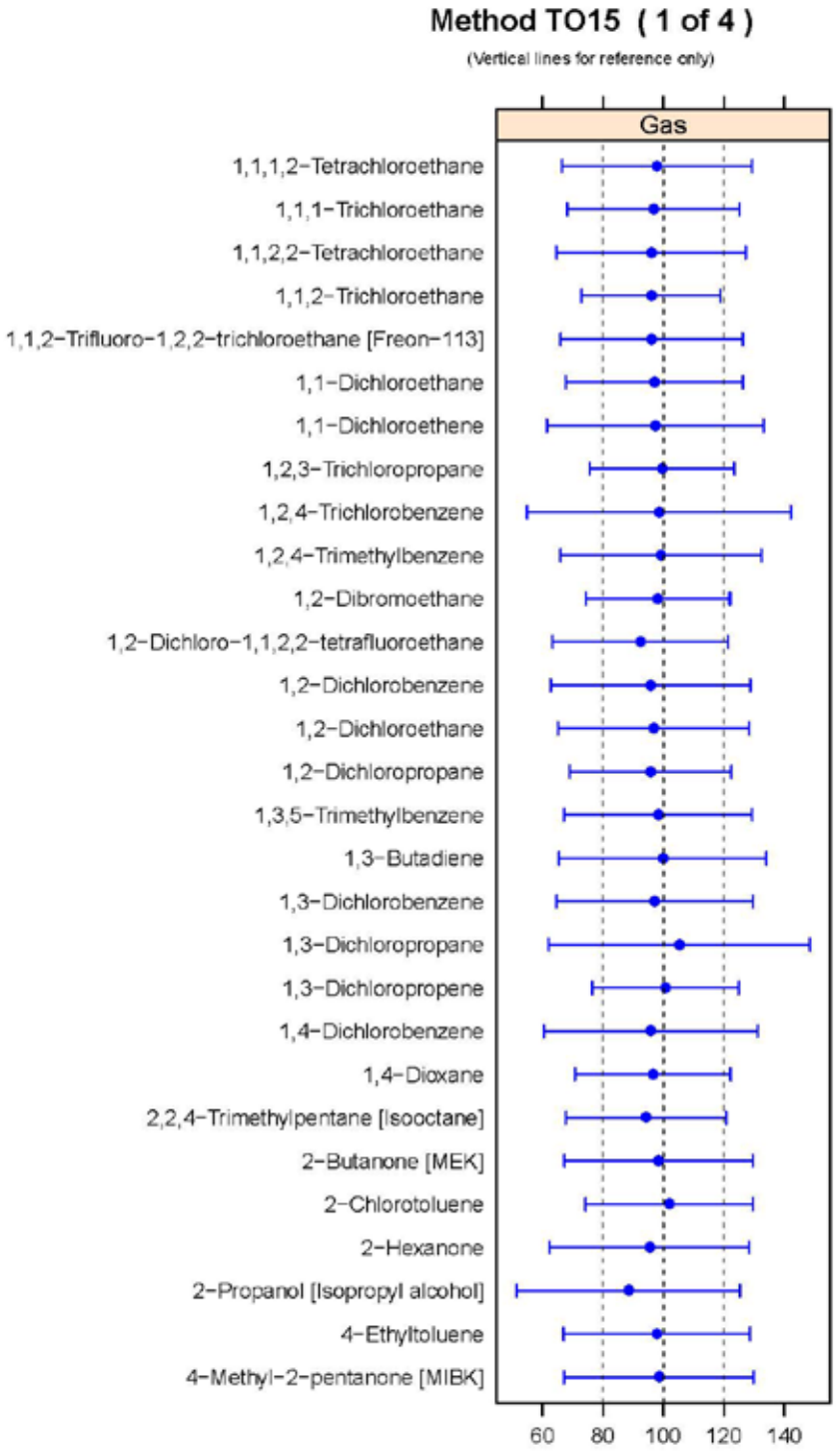

Method 8330.8330B
(Vertical lines for reference only)
Water
1,2-Dinitrobenzene [1,2-DNB]
1,3,5-Trinitrobenzene [1,3,5-TNB]
1,3-Dinitrobenzene [1,3-DNB]
2,4,6-Trinitrotoluene
2,4-Diamino-6-nitrotoluene
2,4-Dinitrotoluene
2,6-Diamino-4-nitrotoluene
2,6-Dinitrotoluene
2-Amino-4,6-dinitrotoluene
2-Nitrotoluene
3,5-Dinitroaniline
3-Nitrotoluene
4-Amino-2,6-dinitrotoluene
4-Nitrotoluene
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)
Hexahydro-1,3-dinitroso-5-nitro-1,3,5,triazine (DNX)
Hexahydro-1-nitroso-3,5-dinitro-1,3,5-triazine (MNX)
Nitrobenzene
Nitroglycerin
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)
PETN
tetryl
60
80
100
120

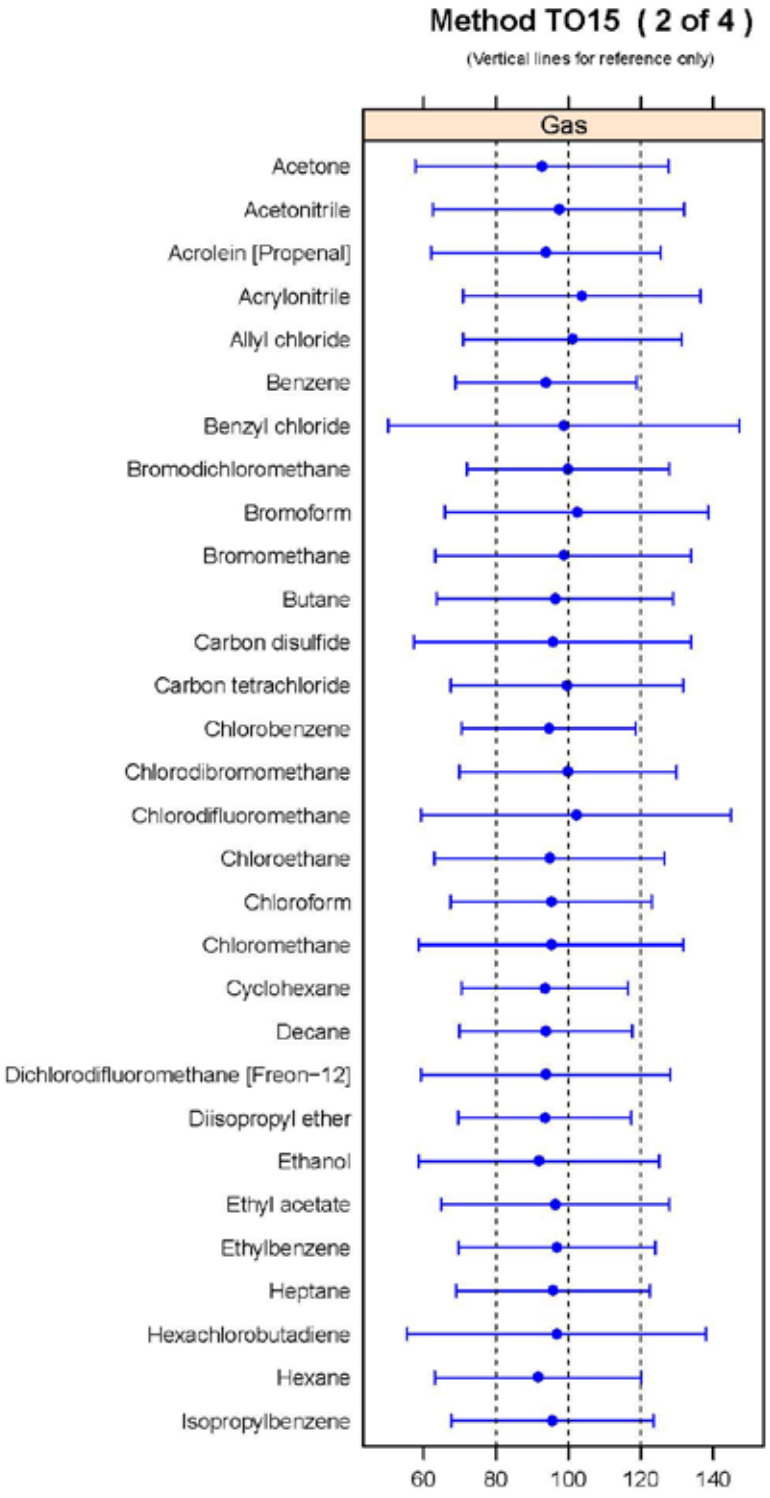

Method 8330B
(Vertical lines for reference only)
Solid
1,2-Dinitrobenzene [1,2-DNB]
1,3,5-Trinitrobenzene [1,3,5-TNB]
1,3-Dinitrobenzene [1,3-DNB]
2,4,6-Trinitrotoluene
2,4-Dinitrotoluene
2,6-Dinitrotoluene
2-Amino-4,6-dinitrotoluene
2-Nitrotoluene
3,5-Dinitroaniline
3-Nitrotoluene
4-Amino-2,6-dinitrotoluene
4-Nitrotoluene
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)
Nitrobenzene
Nitroglycerin
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)
PETN
tetryl
80
100
120

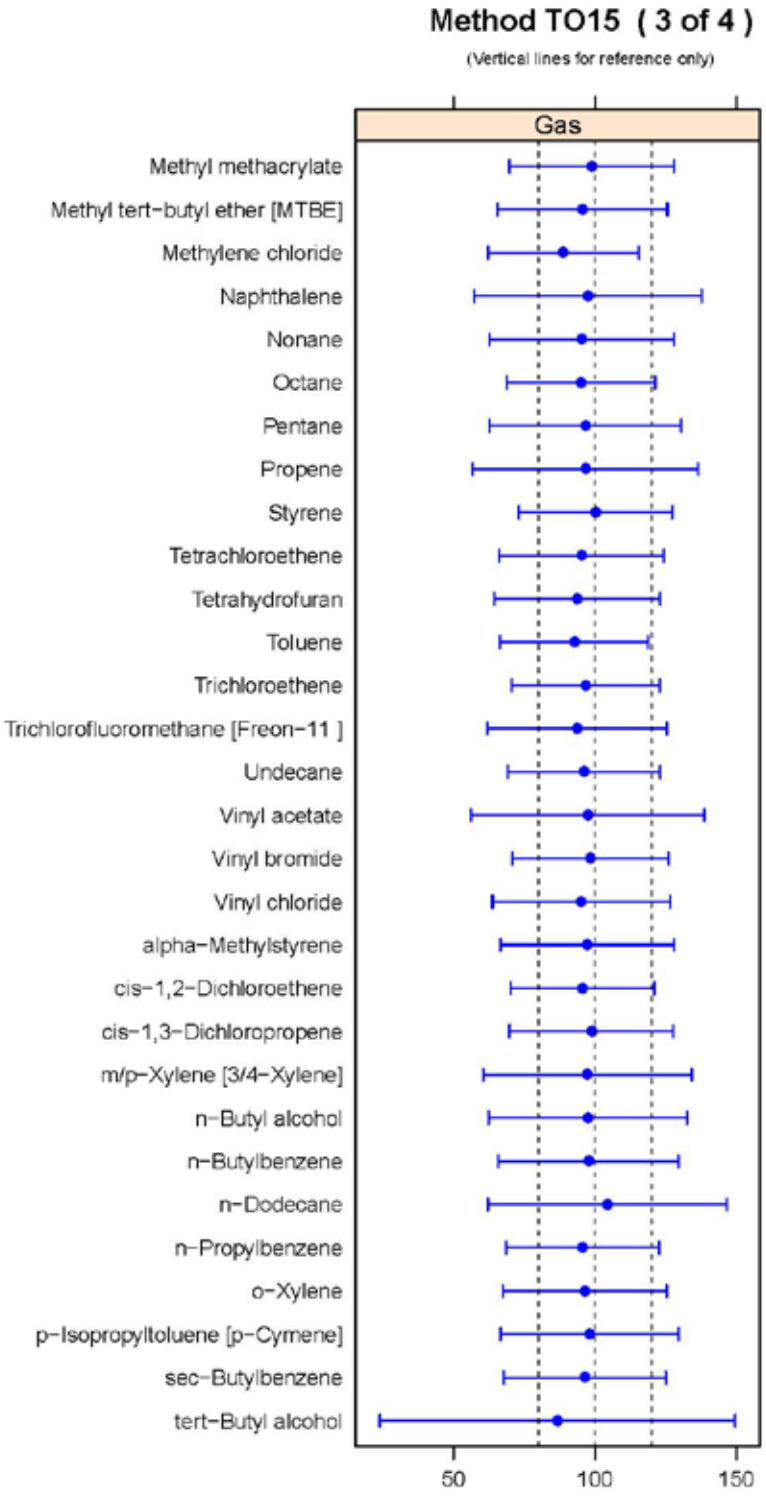

Method 9010.9020 Series
(Vertical lines for reference only)
80
90
100
110
120
Solid
Water
Cyanide, Total
80
90
100
110
120

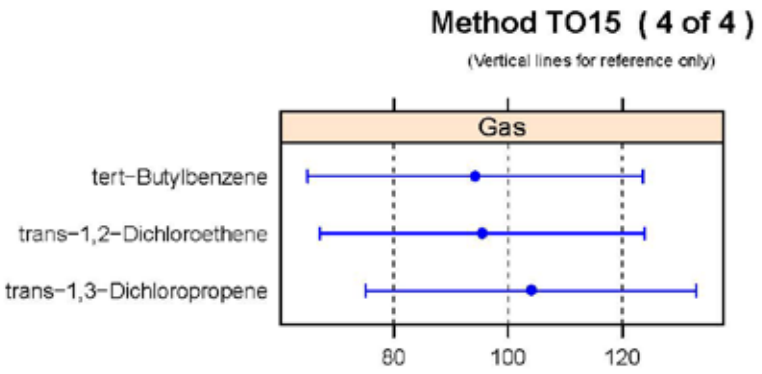

Method 9056
(Vertical lines for reference only)
Solid
Water
Bromide
Chloride
Fluoride
Nitrate
Nitrite
Phosphate
Sulfate
80
90
100
110
120
130


Method RSK175
(Vertical lines for reference only)
Water
Acetylene
Butane
Carbon dioxide
Ethane
Ethylene
Isobutane
Methane
Propane
Propene
80
100
120
140
160
180


Method TO15 (1 of 4)
(Vertical lines for reference only)
Gas
1,1,1,2-Tetrachloroethane
1,1,1-Trichloroethane
1,1,2,2-Tetrachloroethane
1,1,2-Trichloroethane
1,1,2-Trifluoro-1,2,2-trichloroethane [Freon-113]
1,1-Dichloroethane
1,1-Dichloroethene
1,2,3-Trichloropropane
1,2,4-Trichlorobenzene
1,2,4-Trimethylbenzene
1,2-Dibromoethane
1,2-Dichloro-1,1,2,2-tetrafluoroethane
1,2-Dichlorobenzene
1,2-Dichloroethane
1,2-Dichloropropane
1,3,5-Trimethylbenzene
1,3-Butadiene
1,3-Dichlorobenzene
1,3-Dichloropropane
1,3-Dichloropropene
1,4-Dichlorobenzene
1,4-Dioxane
2,2,4-Trimethylpentane [Isooctane]
2-Butanone [MEK]
2-Chlorotoluene
2-Hexanone
2-Propanol [Isopropyl alcohol]
4-Ethyltoluene
4-Methyl-2-pentanone [MIBK]
60
80
100
120
140


Method TO15 (2 of 4)
(Vertical lines for reference only)
Gas
Acetone
Acetonitrile
Acrolein [Propenal]
Acrylonitrile
Allyl chloride
Benzene
Benzyl chloride
Bromodichloromethane
Bromoform
Bromomethane
Butane
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chlorodibromomethane
Chlorodifluoromethane
Chloroethane
Chloroform
Chloromethane
Cyclohexane
Decane
Dichlorodifluoromethane [Freon−12]
Diisopropyl ether
Ethanol
Ethyl acetate
Ethylbenzene
Heptane
Hexachlorobutadiene
Hexane
Isopropylbenzene
60
80
100
120
140


Method TO15 (3 of 4)
(Vertical lines for reference only)
Gas
Methyl methacrylate
Methyl tert-butyl ether [MTBE]
Methylene chloride
Naphthalene
Nonane
Octane
Pentane
Propene
Styrene
Tetrachloroethene
Tetrahydrofuran
Toluene
Trichloroethene
Trichlorofluoromethane [Freon-11]
Undecane
Vinyl acetate
Vinyl bromide
Vinyl chloride
alpha-Methylstyrene
cis-1,2-Dichloroethene
cis-1,3-Dichloropropene
m/p-Xylene [3/4-Xylene]
n-Butyl alcohol
n-Butylbenzene
n-Dodecane
n-Propylbenzene
o-Xylene
p-Isopropyltoluene [p-Cymene]
sec-Butylbenzene
tert-Butyl alcohol
50
100
150


Method TO15 (4 of 4)
(Vertical lines for reference only)
Gas
tert-Butylbenzene
trans-1,2-Dichloroethene
trans-1,3-Dichloropropene
80
100
120