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Term
A-posteriori Detection
Definition: A binary detection decision based upon the observed (net) signal and a definite criterion of detection. It corresponds to the critical level, LC. {OW/TSC}
A-priori Detection
Definition: An estimate, based on a knowledge of the probability distribution of a net signal, of the detection capabilities of a given measurement process. It corresponds to the detection limit, LD. {OW/TSC}
Accuracy
Definition: The degree of agreement between an observed value and an accepted reference value. Accuracy includes a combination of random error (precision) and systematic error (bias) components, which are due to sampling and analytical operations; a data quality indicator. {ORD} {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS} {OECA} {ORCR}
Action Level (regulatory)
Definition: The concentration of lead or copper in water specified in §141.80(c) which determines, in some cases, the treatment requirements contained in subpart I of this part that a water system is required to complete. {OW/TSC} [40 CFR Part 141.2] Acronym: AL
Activity (radiochemistry)
Definition: Rate of nuclear decay occurring in a body of material, equal to the number of nuclear disintegrations per unit time. {OW/TSC}

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<p>Alpha, (α)</p> <p>Definition: The tolerated probability of a "false positive" (i.e., Type I error). See False Positive. {ORD} {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS}</p>
<p>Analyst</p> <p>Definition: Any individual who performs analytical methods and associated procedures and who is the one responsible for applying required laboratory practices and other pertinent quality controls to meet the required level of quality. {ORD} {OW/EAD} {OPP} {OAR/OAQPS} {OECA} {ORCR}</p>
<p>Analytical Batch</p> <p>Definition 1: Environmental samples that are prepared and/or analyzed together with the same process and personnel and using the same lot(s) of reagents. {OW/EAD} {OPP} Definition 2: A group of samples, including quality control samples, which are processed together using the same method, the same lots of reagents, and at the same time or in continuous, sequential time periods. Samples in each batch should be of similar composition and share common internal quality control standards. {ORD} {ORCR} Definition 3: A set of field samples (not to exceed 20, excluding quality control samples) analyzed on the same instrument within a 24-hour period that begins and ends with the analysis of appropriate Continuing Calibration Check standards (CCCs). Additional CCCs may be required depending on the length of the analysis batch and/or the number of field samples. {OW/TSC}</p>
<p>Analytical Response</p> <p>Definition: A numerical observation whose magnitude is related to the amount or concentration of the analyte in a sample. One or more analytical responses (as specified by a method) are used, in conjunction with a calibration curve or factor), to produce an</p>

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analytical result. {ORD} {OW/EAD} {OAR/OAQPS} {ORCR}
Analytical Result
Definition 1: A formal numerical estimate of the concentration of an analyte in a sample, which is obtained by carrying out once following the procedure specified in an analytical method. Note that a method may specify analysis of more than one portion of a sample in order to produce one analytical result. {OW/EAD} Definition 2: A formal numerical estimate of the concentration of an analyte in a sample obtained by following the procedure specified in an analytical method. Note that a method may specify analysis of more than one portion of a sample in order to produce one analytical result. {ORD} {ORCR}
Audit
Definition: A systematic evaluation to determine the conformance to quantitative and qualitative specifications of some operational function, activity, or quality assurance panel. {ORD} {OW/EAD} {OPP} {OAR/OAQPS} {ORCR}
Batch, Preparation (radiochemistry)
Definition: A set of up to 20 environmental field samples that are prepared and/or analyzed together with the same instrumentation and personnel, using the same lot(s) of reagents, with a maximum time between the start of preparation of the first and last sample in the batch being 24 hours. {OW/TSC}
Best Available Technology (regulatory)
Definition: The best technology, treatment techniques, or other means which the Administrator finds, after examination for efficacy under field conditions and not solely under laboratory conditions, are available (taking cost into consideration). For the purposes of setting MCLs for synthetic organic chemicals, any BAT must be at least as effective as granular activated carbon. {OW/TSC} [40 CFR

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Part 141.2] Acronym: BAT
Beta, (β)
Definition: The tolerated probability of a "false negative" (i.e., Type II error). See False Negative. {ORD} {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS}
Bias
Definition: The constant or systematic distortion of a measurement process, different from random error, which manifests itself as a persistent positive or negative deviation from the known or true value. This can result from improper data collection, poorly calibrated analytical or sampling equipment, or limitations or errors in analytical methods and techniques. {ORD} {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS} {OECA} {ORCR}
Blank
Definition 1: A specimen that is intended to contain none of the analytes of interest and which is subjected to the usual analytical or measurement process to establish a zero baseline or background value. {OW/TSC} {OAR/OAQPS} {OECA} {ORCR} Definition 2: Different types of blanks include: calibration blank, equipment blank, field blank, instrument blank, laboratory blank, laboratory reagent blank, method blank, preparation blank, reagent blank (or method reagent blank).
Blind Sample
Definition 1: A sub-sample for analysis with a composition known to the submitter. The analyst/laboratory may know the identity of the sample but not its composition. It is used to test the analyst's or laboratory's proficiency in the execution of the measurement process.

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<p>{ORD} {OW/EAD} {OPP} {ORCR} Definition 2: Different types of blind samples include: Single Blind and Double Blind</p>
<p>Calibration</p>
<p>Definition: Set of operations that establish, under specified conditions, the relationship between values of quantities indicated by a measuring instrument or measuring system, or values represented by material measure or a reference material, and the corresponding values realized by standards. {ORD} {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS} {OECA} {ORCR}</p>
<p>Calibration Blank (calibration)</p>
<p>Definition: See Quality Terms Section.</p>
<p>Calibration Blank (quality)</p>
<p>Definition 1: A sample of analyte-free media which is used to establish the low range of a calibration. {ORD} {OAR/OAQPS} {ORCR}</p>
<p>Definition 2: A volume of reagent water or other reference matrix containing none of the analytes above the method detection limits. The calibration blank is a zero standard and can be used along with prepared standards to calibrate the instrument. {OW/EAD} {ORCR}</p>
<p>Calibration Curve</p>
<p>Definition: The graphical relationship between the known values, such as concentrations, of a series of calibration standards and their instrument response. {ORD} {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS} {OECA} {ORCR}</p>
<p>Calibration Method</p>
<p>Definition: A defined technical procedure for performing a calibration. {ORD} {OPP} {ORCR}</p>

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<p>Calibration Standard</p> <p>Definition 1: A substance or reference material used to calibrate an instrument. {OPP} {ORCR} Definition 2: A solution prepared from the dilution of stock standard solutions. The calibration solutions are used to calibrate the instrument response with respect to analyte concentration. {ORD} {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS} {OECA} {ORCR} Definition 3: A solution prepared from the primary dilution standard solution and/or stock standard solutions that includes the internal standards and surrogate analytes, when applicable. The CAL solutions are used to calibrate the instrument response with respect to analyte concentration. {OW/TSC}</p> <p>Acronym: CAL</p>
<p>Calibration Verification Solution</p> <p>Definition: A solution of method analytes, used to evaluate the performance of the instrument system with respect to a defined set of method criteria. {ORD} {ORCR}</p> <p>Acronym: CV Solution</p>
<p>Calibration Verification Standard</p> <p>Definition 1: The mid-point calibration standard that is used to verify calibration. {OW/EAD} {OPP} {OAR/OAQPS} {ORCR} Definition 2: A known, standard solution, often from a source different from the calibration standards that is used to verify that a calibration is accurate. {OPP} {ORCR}</p> <p>Acronym: VER</p>
<p>Censored Method</p> <p>Definition: Analytical methods that frequently produce non-numerical results for blanks (i.e., ND for 'non-detect'). These nonnumeric</p>

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values are not due to censoring of data. {OW/EAD}
Certified Reference Material Definition: Reference material characterized by a metrologically valid procedure for one or more specified properties, accompanied by a certificate that provides the value of the specified property, its associated uncertainty, and a statement of metrological traceability. Certified Reference Materials (CRMs) are 'controls' or standards used to check the quality and metrological traceability of products, to validate analytical measurement methods, or for the calibration of instruments. A certified reference material is a particular form of measurement standard. {OW/TSC} Acronym: CRM
Contaminant (regulatory) Definition: Any physical, chemical, biological, or radiological substance or matter in water. {OW/TSC} [40 CFR Parts 141.2, 142.2 and 143.2]
Continuing Calibration Check Definition 1: An analytical standard prepared from the same source as the calibration standards that is analyzed periodically prior to, during, and/or after analysis of samples to verify the continued accuracy of an instrument calibration. {ORD} {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS} {OECA} {ORCR} Definition 2: A calibration standard containing the method analytes and surrogate(s), which is analyzed periodically to verify the accuracy of the existing calibration for those analytes. {OW/TSC} {ORCR} Acronym: CCC
Continuing Calibration Verification

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Acronym: CCV
Data Quality Indicators
Definition: The quantitative statistics and qualitative descriptors that are used to interpret the degree of acceptability or utility of data to the user. The principal indicators of data quality are precision, bias, accuracy, representativeness, comparability, completeness, and sensitivity. {OW/EAD}
Acronym: DQIs
Data Quality Objectives
Definition: Qualitative and quantitative statements derived from the DQO Planning Process that clarify the purpose of the study, define the most appropriate type of information to collect, determine the most appropriate conditions from which to collect that information, and specify tolerable levels of potential decision errors. {ORD} {OW/EAD} {OPP} {OAR/OAQPS} {ORCR}
Acronym: DQO
Degrees of Freedom
Definition: The total number of items in a sample minus the number of independent relationships existing among them; the divisor used to calculate a variance term; in the simplest cases, it is one less than the number of observations. {ORD} {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS} {OECA} {ORCR}
Detection
Definition: To have obtained experimental evidence that the analyte concentration is greater than zero. {ORD} {OW/EAD} {OPP}

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<p>{ORCR}</p> <p>Detection Limit</p> <p>Definition 1: See definition for Limit of Detection. {ORD} {OPP} Definition 2: See Method Detection Limit. {OW/EAD} {OPP} {OW/TSC} Definition 3: The minimum concentration of an analyte that can be identified, measured and reported with 99% confidence that the analyte concentration is greater than zero. This is a statistical determination of precision and accurate quantitation is not expected at this level. {OECA}</p> <p>Acronym: DL</p>
<p>Detection Limit (radiochemistry)</p> <p>Definition: The Detection Limit (DL) for radionuclides in drinking water is defined in 40 CFR 141.25(c) as the radionuclide concentration that can be counted with a precision of plus or minus 100% at the 95% confidence level (1.96σ, where σ is the standard deviation of the net counting rate of the sample). {OW/TSC}</p> <p>Acronym: DL</p>
<p>Dissolved Analyte</p> <p>Definition: The concentration of analyte in an aqueous sample that will pass through a 0.45 μm membrane filter assembly prior to sample acidification. {OW/TSC}</p>
<p>Double Blind</p> <p>Definition 1: A sample submitted to evaluate performance with concentration and identity unknown to the analyst and laboratory. {ORD} {OW/EAD} {ORCR} Definition 2: A blind sample in which the concentration is unknown to the analyst and the provider;</p>

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acceptance limits are generally calculated from results received from double blind samples. {OPP}
Duplicate (radiochemistry) Definition: A second aliquot of a field sample that is processed in exactly the same manner as the samples in the preparation batch. Analysis of the DUP provides a measure of the precision associated with batch preparation. {OW/TSC} Acronym: DUP
Dynamic Range Definition: The range over which instrument response is used to produce analytical results. {ORD} {OW/EAD} {OPP} {OAR/OAQPS} {ORCR}
Environmental Laboratory Advisory Board Definition: A Federal Advisory Committee, with members appointed by EPA and composed of a balance of non-state, non-federal representatives, from the environmental laboratory community, and chaired by an ELAB member. {ORD} {OW/EAD} {OPP} {OAR/OAQPS} {ORCR} Acronym: ELAB
Equipment Blank Definition: A sample of analyte-free media which has been used to rinse common sampling equipment to check effectiveness of decontamination procedures. {OW/EAD} {OPP} {OECA} {ORCR}
External Standard

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<p>Definition: A known amount of analyte that is analyzed separately from samples as part of a set of calibration standards. The response of the analyte in the sample is compared to the response of the analyte in the external standard for quantitation. {ORD} {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS} {ORCR}</p>
<p>Extraction Batch</p> <p>Definition: A set of up to 20 field samples (not including QC samples) extracted together by the same person(s) during a work day using the same lots of solvents, surrogate solution, and fortifying solutions. {OW/TSC}</p>
<p>False Acceptance</p> <p>Definition: See Beta, (β)</p>
<p>False Negative</p> <p>Definition: An analysis determines the absence of an analyte when it is actually present at or above a given concentration or limit. (statistical definition) An error of the second kind (type II error), which means failing to reject the null hypothesis when it is actually false. {ORD} {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS} {ORCR}</p>
<p>False Positive</p> <p>Definition: An analysis determines the presence of an analyte when it is actually absent at a given concentration or limit. (statistical definition) An error of the first kind (type I error), which means rejecting the null hypothesis when it is actually true. {ORD} {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS} {ORCR}</p>
<p>False Rejection</p>

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Definition: See Alpha, (α)
Field Blank
Definition 1: Blank prepared in the field by filling a clean container with pure de-ionized water and appropriate preservative, if any, for the specific sampling activity being undertaken. {ORD} {OPP} {OSWER} {OAR/OAQPS} {OECA} {ORCR} Definition 2: An aliquot of reagent water or other reference matrix that is placed in a sample container in the field, and treated as a sample in all respects, including exposure to sampling site conditions, storage, preservation, and all analytical procedures. The purpose of the field blank is to determine if the field or sample transporting procedures and environments have contaminated the sample. {OW/EAD} {ORCR}
Field Blank (radiochemistry)
Definition: Samples preserved with reagents that are not provided by the laboratory. These should be accompanied by a radioactive-free field blank sample that is preserved in the same manner as the submitted samples. The field blank is a volume of blank matrix that is placed in a clean sample container, preserved in the field, shipped along with the samples and subjected to the same analytical procedures as the samples. A sample of the preservative should also accompany the field samples to determine whether it contributes any contamination. {OW/TSC}
Field Duplicates
Definition: Two separate samples collected at the same time and place under identical circumstances, and treated exactly the same throughout field and laboratory procedures. Analyses of FD1 and FD2 give a measure of the precision associated with sample collection, preservation, and storage, as well as with laboratory procedures. {OW/TSC}
Acronym: FD1, FD2
Field Reagent Blank

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<p>Definition: An aliquot of reagent water or other blank matrix that is shipped to the field sampling site, where it is poured into a separate FRB sample bottle and shipped back to the laboratory for analysis. The FRB is treated as a sample in all respects, including shipment to/from the sampling site, exposure to the sampling site conditions, storage, preservation, and all analytical procedures. The purpose of the FRB is to determine if method analytes or other interferences are present in the field environment. {OW/TSC}</p> <p>Acronym: FRB</p>
<p>Graded Approach</p> <p>Definition 1: The process of basing the level of application of managerial controls applied to an item or work according to the intended use of the results and the degree of confidence needed in the quality of the results. {OW/EAD} {OW/TSC} Definition 2: Because of the diversity of work conducted through procurements and assistance agreements, EPA recognizes that a "one size fits all" approach to quality specifications will not work. Therefore, the implementation of the EPA Quality System is based on a graded approach to indicate that quality systems for different organizations and programs will vary according to the specific objectives and needs of the organization. {OPP} {OAR/OAQPS} {ORCR}</p>
<p>Gross Alpha Particle Activity (regulatory)</p> <p>Definition: The total radioactivity due to alpha particle emission as inferred from measurements on a dry sample. {OW/TSC} [40 CFR Part 141.2]</p>
<p>Gross Beta Particle Activity (regulatory)</p> <p>Definition: The total radioactivity due to beta particle emission as inferred from measurements on a dry sample. {OW/TSC} [40 CFR Part 141.2]</p>

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<p>Holding Times</p> <p>Definition 1: The maximum times that samples may be held, after the sample is taken, prior to analysis and still be considered valid or not compromised. {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS} {ORCR} Definition 2: The maximum times that samples may be held, after the sample is taken prior to preparation and/or analysis and still be considered valid or not compromised. {ORD} {ORCR}</p>
<p>Hypothesis Test</p> <p>Definition: A statistical procedure for determining if a sample provides sufficient evidence to reject or accept one statement regarding the population of interest in favor of an alternative statement. {ORD} {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS} {ORCR}</p>
<p>Incurred Compound</p> <p>Definition: A compound that is present in a sample without addition by the laboratory. The compound may be essentially alien, but has been introduced to the bulk material at some point prior to the material being sampled. Recovery of added (e.g., spiked or fortified) compound may be different from incurred compound. {OPP}</p>
<p>Independent Calibration Verification</p> <p>Definition: An analytical standard used to verify calibration prior to analysis of samples. The ICV is obtained from a separate source than the calibration standards, but may be from a different lot from the same vendor. {ORD} {OW/EAD} {OPP} {ORCR}</p> <p>Acronym: ICV</p>
<p>Initial Demonstration of Capability</p> <p>Definition: Performed to demonstrate the ability to achieve a low background, to demonstrate the ability to achieve the precision and</p>

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accuracy required by the method, and includes determining the method detection limit (MDL) or other sensitivity requirement. {OW/TSC} Acronym: IDC
Initial Demonstration of Performance Definition: Used to characterize instrument performance (determination of linear dynamic ranges and analysis of quality control samples) and laboratory performance (determination of method detection limits) prior to analysis of compliance samples. {OW/TSC} Acronym: IDP
Initial Precision and Recovery Definition: Four aliquots of a reference matrix spiked with all the analytes of interest and labeled compounds and analyzed to establish the ability of the laboratory to generate acceptable precision and recovery. An IPR is performed prior to the first time a given method is used and any time the method or instrumentation is modified. {ORD} {OW/EAD} {ORCR} Acronym: IPR
Instrument Blank Definition 1: A clean sample (e.g., distilled water) processed through the instrumental steps of the measurement process; used to determine instrument contamination. {ORD} {OECA} Definition 2: See Method Blank. {OW/EAD} {ORCR}
Instrument Detection Limit Definition 1: The minimum quantity of analyte of the concentration equivalent that identifies an analyte signal equal to three times the standard deviation of the background signal at the selected wavelength, mass, retention time, or absorbance line, etc. {ORD} {ORCR}

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<p>Definition 2: The concentration equivalent to the analyte signal which is equal to three times the standard deviation of a series of 10 replicate measurements of the calibration blank signal at the same wavelength. {OW/TSC} Definition 3: The concentration equivalent to the analyte signal which is equal to three times the standard deviation of a series of 10 replicate measurements of the calibration blank signal at the selected analytical mass(es). {OW/TSC}</p> <p>Acronym: IDL</p>
<p>Instrument Performance Check</p> <p>Definition 1: A quality control sample, which may be a blank or fortified with analyte that is used to verify instrument performance and calibration. {ORD} {OECA} Definition 2: See Ongoing Precision and Recovery Standard {OPR} {OW/EAD} Definition 3: A solution of one or more method analytes, surrogates, internal standards, or other test substances used to evaluate the performance of the instrument system with respect to a defined set of criteria. {OW/TSC}</p> <p>Acronym: IPC</p>
<p>Inter-laboratory Procedure Study</p> <p>Definition 1: A study where a centralized study design coordinator sends identical samples to multiple different laboratories for analysis. The resulting raw data are analyzed by the study design coordinator by a given procedure to provide estimates inter-laboratory accuracy, precision, and/or detection limits. {OW/EAD} {OPP} {OAR/OAQPS} {ORCR} Definition 2: An inter-laboratory method validation study is a practical testing of the written method on identical materials, usually derived from split samples, by a number of laboratories. The study is not intended to evaluate laboratories; it is intended to evaluate method reproducibility among laboratories. Deviations from the inter-laboratory study protocol should be strongly discouraged, and any deviations that occur should be documented. Participating in Inter-laboratory Comparison Studies/Programs can be either existing Proficiency Evaluation Programs or Round Robin Studies or a combination of programs and studies to assure evaluation of all laboratory operations.</p>
<p>Inter-laboratory Test Comparison</p>

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<p>Definition: Organization, performance and evaluation of tests on the same or similar items or materials by two or more laboratories in accordance with predetermined conditions. {OPP} {ORCR}</p>
<p>Internal Standard</p> <p>Definition: A pure analyte (s) or labeled compound added to a sample, extract, or standard solution in known amount(s) and used to measure the relative responses of other method analytes and surrogates that are components of the same solution. The internal standard must be an analyte that is not a desired target analyte. {OLEM/OSRTI} {ORD} {OPP} {OECA} {OW/TSC} {ORCR} OW/EAD} {OW/TSC} {OAR/OAQPS} {ORCR}</p> <p>Acronym: IS</p>
<p>Internal Standard Quantitation</p> <p>Definition: A means of determining the concentration of a naturally occurring (native) compound or labeled compound by reference to an internal standard. {OW/EAD} {OPP} {OW/TSC} {ORCR} {ORD} {OAR/OAQPS} {ORCR}</p>
<p>Isotope Dilution</p> <p>Definition: A technique for mass spectrometric quantitation of an analyte of interest in which a stable isotope-labeled compound is used as both a surrogate and an internal standard for a non-labeled compound. The stable isotope-labeled compound is added to the sample that then undergoes preparation and analysis. Losses of the analyte during preparation and interferences during analysis should be mirrored in the isotope-labeled compound, and thus should not have an adverse effect on quantitation. {ORD} {OPP} {OAR/OAQPS} {OECA} {ORCR}</p>
<p>Isotope Dilution Quantitation</p>

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<p>Definition: A means of determining a naturally occurring (native) compound by reference to the same compound in which one or more atoms has been isotopically enriched. In isotope dilution, labeled compounds are often spiked into each sample and allow identification and correction of the concentration of the native compounds in the analytical process. {OW/EAD} {OAR/OAQPS} {ORCR}</p>
<p>L(Q)</p>
<p>Definition: See definition for Minimum Reporting Level. {ORD} Preferred Term: Minimum Reporting Level</p>
<p>L(Q) Quantitation Definitions - Quantification Limit</p>
<p>Definition: The smallest detectable concentration of analyte greater than the detection limit where the required* accuracy (precision & bias) is achieved for the intended purpose. {OW/TSC} {ORCR}</p>
<p>Labeled Compound</p>
<p>Definition 1: A molecule in which one or more of the atoms is isotopically enriched, thereby increasing the mass of the molecule. {OW/EAD} {OAR/OAQPS} {ORCR} Definition 2: A molecule in which one or more of the atoms is isotopically enriched, thereby increasing the mass of the molecule. {ORD} {ORCR}</p>
<p>Labeled Injection Internal Standard</p>
<p>Definition: A labeled compound spiked into the concentrated extract immediately prior to injection of an aliquot of the extract into the LC/MS/MS. {OW/EAD} {OAR/OAQPS} {ORCR}</p>
<p>Laboratory Blank</p>

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<p>Definition: See Method Blank. {ORD} {OW/EAD} Preferred Term: Method Blank</p>
<p>Laboratory Control Sample</p> <p>Definition 1: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes from the same source as the calibration standards. It is generally used to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. {ORD} {OPP} {ORCR} Definition 2: See Ongoing Precision and Recovery Standard {OPR} {OW/EAD}</p> <p>Acronym: LCS</p>
<p>Laboratory Duplicate(s)</p> <p>Definition 1: The analysis or measurements of the variable of interest performed identically on two sub-samples of the same sample, usually taken from the same container. The results from duplicate analyses are used to evaluate analytical or measurement precision and include variability associated with sub-sampling and the matrix, but not the precision of field sampling, preservation, or storage internal to the laboratory. {ORD} {OW/EAD} {OPP} {ORCR} Definition 2: Two aliquots of the same sample taken in the laboratory and analyzed separately with identical procedures. Analyses of LD1 and LD2 indicates precision associated with laboratory procedures, but not with sample collection, preservation, or storage procedures {OW/TSC}</p> <p>Acronym: LD1, LD2</p>
<p>Laboratory Fortified Blank</p> <p>Definition 1: See Laboratory Control Sample. {ORD} {OW/EAD} {ORCR} Definition 2: An aliquot of reagent water or other blank matrix to which known quantities of the method analytes and all the preservation compounds are added. The LFB is analyzed exactly</p>

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<p>like a sample, and its purpose is to determine whether the methodology is in control and whether the laboratory is capable of making accurate and precise measurements. {OW/TSC}</p> <p>Acronym: LFB</p>
<p>Laboratory Fortified Blank (radiochemistry)</p> <p>Definition: The LFB consists of a volume of a blank matrix to which a known activity of a radioisotope is added. The LFB is prepared and analyzed and results calculated exactly like a sample, and its purpose is to determine whether the methodology is in control, and whether the laboratory is capable of making accurate measurements. {OW/TSC}</p> <p>Acronym: LFB</p>
<p>Laboratory Fortified Sample Matrix</p> <p>Definition 1: See Matrix Spike. {ORD} {OW/EAD} {ORCR} Definition 2: An aliquot of a preserved environmental field sample to which known quantities of the method analytes are added in the laboratory. The LFSM is processed and analyzed exactly like a sample, and its purpose is to determine whether the sample matrix contributes bias to the analytical results. The background concentrations of the analytes in the sample matrix must be determined in a separate aliquot and the measured values in the LFSM corrected for background concentrations. {OW/TSC}</p> <p>Acronym: LFSM</p>
<p>Laboratory Fortified Sample Matrix Duplicate</p> <p>Definition: A second aliquot of the preserved environmental field sample used to prepare the LFSM which is fortified, extracted and analyzed identically. The LFSMD is used instead of the Field Duplicates to assess method precision and accuracy when the occurrence of target analytes is low. {OW/TSC}</p> <p>Acronym: LFSMD</p>

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<p>Acronym: LFSMD</p> <p>Laboratory Fortified Sample Matrix Duplicate (radiochemistry)</p> <p>Definition: A third aliquot of a field sample that has the same quantity of radionuclide(s) added to it as the LFSM. The LFSMD is prepared and analyzed and results calculated exactly like the LFSM. It is used in place of the DUP to assess preparation batch precision when non-detects are frequent. {OW/TSC}</p> <p>Acronym: LFSMD</p>
<p>Laboratory Fortified Sample Matrix (radiochemistry)</p> <p>Definition: A second aliquot of a field sample that has a known quantity of the radionuclide(s) being measured added to it. The LFSM is prepared and analyzed and results calculated in exactly the same manner as the samples in the preparation batch. Its purpose is to determine whether the sample matrix contributes bias to the results. The native level of the radionuclide(s) must be determined in an unspiked field sample aliquot in order to correct for levels already present in a sample that could contribute to the LFSM response. {OW/TSC}</p> <p>Acronym: LFSM</p>
<p>Laboratory Reagent Blank</p> <p>Definition 1: See Method Blank. {ORD} {OW/EAD} Definition 2: An aliquot of reagent water or other blank matrix that is treated exactly as a sample including exposure to all glassware, equipment, solvents, reagents, sample preservatives, internal standards, and surrogates that are used in the extraction batch. The LRB is used to determine if method analytes or other interferences are present in the laboratory environment, the reagents, or the apparatus. {OW/TSC}</p> <p>Acronym: LRB</p>

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<p>Laboratory Reagent Blank (radiochemistry)</p> <p>Definition: The LRB consists of an aliquot of a blank matrix that is prepared and analyzed and results calculated exactly like a sample, including exposure to all glassware and equipment that are used in the preparation batch. The LRB is used to assess the process of handling, preparation and analysis for cross-contamination and for low-level analytical bias. {OW/TSC}</p> <p>Acronym: LRB</p>
<p>LC Detection (Layperson's Definitions)</p> <p>Definition 1: Critical Value (LC) - The minimum result which can be reliably discriminated from a blank (for example, with a 99% confidence level). {OAR/OAQPS} Definition 2: Critical Value (LC) - The lowest result that can be distinguished from the blank at a chosen level, α, of statistical confidence. {OW/EAD} {OW/TSC}</p>
<p>LC Detection (Statistical Definitions)</p> <p>Definition 1: Critical Value (LC) - Smallest measured amount or concentration of analyte in a sample that gives rise to a Type I error tolerance of alpha under the null hypothesis that the true amount or concentration of analyte in the sample is equal to that of a blank. (The alternative hypothesis is that the true amount or concentration of analyte is greater than that of a blank.) {OW/TSC} Definition 2: Critical Value (LC) - The minimum observed result such that the lower 100 (1-α)% confidence limit on the result is greater than the mean of the method blanks.</p>
<p>LD Detection (Layperson's Definitions)</p> <p>Definition 1: Detection Limit (LD) - The lowest true concentration that will almost always be detected. Definition 2: Detection Limit (LD) - The minimum detectable value is smallest amount or concentration of a particular substance in a sample that can be reliably</p>

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detected by a specific measurement process. {OAR/OAQPS} Definition 3: Detection Limit (LD) - The minimum true concentration that will return a result above the critical value given a specific measurement process and confidence level. {OW/EAD} {OW/TSC} {OAR/OAQPS}
LD Detection (Statistical Definitions)
Definition 1: The Minimum Detectable Value (LD) - Once LC is established, LD is the smallest concentration or amount of analyte at which the tolerance for Type II error is equal to beta. Definition 2: The Minimum Detectable Value (Ld) - The lowest true concentration such that the frequency that the result is greater than LC will be 100% (1-β). {OW/TSC}
Limit of Detection
Definition: The minimum concentration of an analyte that can be identified, measured, and reported with 99% confidence that the analyte concentration is greater than zero. {ORD} {OPP} {OAR/OAQPS} {OECA}
Acronym: LOD
Limit of Detection = Detection Limit = Method Detection Limit
Definition: The minimum concentration of an analyte that can be identified, measured, and reported with 99% confidence that the analyte concentration is greater than zero. {ORD} {OPP} {OAR/OAQPS} {OECA}
Limit of Detection/Limit of Quantification
Definition: The LOD and LOQ concentrations are calculated by applying the compound's calibration curve to the noise response of a sample to obtain a value which is then multiplied by a factor of 3 for LOD (3 times of noise) and 10 for LOQ (10 times of noise). The responses of the analytes are not considered in this approach. Only the noise level is included in the calculation. In some cases, the

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concentration of the lowest calibration standard is treated as the LOQ. The LOD is not defined in this case, although the LOD is often assumed to be 1/3 of the LOQ. The lowest possible LOD and LOQ values are not critical in these cases. The rationale of this approach is that the expected analyte concentrations in the samples are high and above the lowest calibration concentration and knowledge of the actual LOD/LOA is not necessary. {OPP}
Limit of Quantification
Definition: See definition for Minimum Reporting Level. {ORD} {ORCR} Acronym: LOQ
Limit of Quantitation
Definition 1: See definition for Minimum Reporting Level. {ORD} {ORCR} Definition 2: The level of quantitation, usually 10 times the signal of the blank. {OW/TSC} Acronym: LOQ
Linear Calibration Range
Definition: The concentration range over which the instrument response is linear. {OW/TSC} Acronym: LCR
Linear Dynamic Range
Definition 1: The concentration range over which the instrument response is linear. {ORD} {OW/EAD} {OPP} {OAR/OAQPS} {OECA} {ORCR} Definition 2: Concentration range over which the instrument response to an analyte is linear. The upper limit determined from a linear calibration by analyzing succeeding higher standard concentrations of the analyte until concentration is no more than 10%

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below the stated concentration of the standard. {OW/TSC} Acronym: LDR
<p>Lower Limit of Quantitation</p> <p>Definition: The lowest concentration at which the laboratory has demonstrated target analytes can be reliably measured and reported with a certain degree of confidence. The LLOQ must be greater than or equal to the lowest point in the calibration curve. The laboratory shall establish the LLOQ at concentrations where both quantitative and qualitative requirements can consistently be met. The laboratory shall verify the LLOQ at least annually, and whenever significant changes are made to the preparation and/or analytical procedure, to demonstrate quantitation capability at lower analyte concentration levels. The verification is performed by spiking a clean control material (e.g., reagent water, solvent blanks, Ottawa sand, diatomaceous earth, etc.) or a representative sample matrix, free of target compounds, at the LLOQ and processing through all preparation and determinative steps of the method. Optimally, the LLOQ should be less than the desired decision level or regulatory action level based on the stated DQOs.</p> <p>Acronym: LLOQ</p>
<p>Lowest Concentration Minimum Reporting Level</p> <p>Definition 1: The LCMRL is determined by selected laboratories during method development. It is used to determine the MRL for an analyte by either a multiplying factor or by pooling the results from a multi-laboratory study. Definition 2: The single laboratory LCMRL is the lowest spiking concentration such that the probability of spike recovery in the 50% to 150% range is at least 99%. {OW/TSC}</p> <p>Acronym: LCMR</p>
<p>Man-made Beta Particle and Photon Emitters (regulatory)</p> <p>Definition: All radionuclides emitting beta particles and/or photons listed in Maximum Permissible Body Burdens and Maximum Permissible Concentration of Radionuclides in Air or Water for Occupational Exposure, NBS Handbook 69, except the daughter</p>

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Permissible Concentration of Radionuclides in Air or Water for Occupational Exposure, NBS Handbook 69, except the daughter products of thorium-232, uranium-235 and uranium-238. {OW/TSC} [40 CFR Part 141.2]
Matrix Definition: The material of which the sample is composed or the substrate containing the analyte of interest, such as waste water, storm water, and biosolids. Also called medium or media. {ORD} {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS} {OECA} {ORCR}
Matrix Effects Definition: Manifestations of non-target analytes or physical/ chemical characteristics of a sample that prevents the quantification of the target analyte (i.e., the compound or element of interest being effectively quantified by the test method) as it is routinely performed, typically adversely impacting the reliability of the determination. For example, a matrix effect can give rise to a high or low bias. {ORD} {OW/EAD} {OW/TSC} {OAR/OAQPS} {OECA} {ORCR}
Matrix Spike and Matrix Spike Duplicate Definition: Two aliquots of the same environmental sample to which known quantities of the target analytes are added in the laboratory. The MS and MSD are analyzed exactly like a sample, and their purpose is: to determine whether the sample matrix contributes bias to the analytical results, and to indicate precision associated with laboratory procedures. The background concentrations of the analytes in the sample matrix must be determined in a separate aliquot and the measured values in the MS and MSD corrected for background concentrations. {ORD} {OW/EAD} {OPP} {OW/TSC} {OECA} {ORCR} Acronym: MS and MSD
Matrix Spike (Spiked Sample or Fortified Sample)

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<p>Definition: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. Matrix spikes are used, for example, to determine the effect of the matrix on a method's recovery efficiency. {ORD} {OW/EAD} {OPP} {OAR/OAQPS} {ORCR}</p>
<p>Maximum Allowable Holding Times</p>
<p>Definition: The maximum amount of time a sample or sample extract can be held prior to processing or analysis. {OW/TSC}</p>
<p>Maximum Contaminant Level</p>
<p>Definition: This is a contaminant-specific standard for acceptable drinking water under SDWA. MCLs also may be used for purposes of RCRA (Resource Conservation and Recovery Act) ground water monitoring to reach contaminant-specific clean-up levels. {OW/EAD} {OW/TSC} {ORCR}</p> <p>Acronym: MCL</p>
<p>Maximum Contaminant Level Goal (regulatory)</p>
<p>Definition: The maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health of persons would occur, and which allows an adequate margin of safety. Maximum contaminant level goals are nonenforceable health goals. {OW/TSC} [40 CFR Part 141.2]</p> <p>Acronym: MCLG</p>
<p>Maximum Contaminant Level (regulatory)</p>
<p>Definition 1: The maximum permissible level of a contaminant in water which is delivered to any user of a public water system. [40 CFR Part 141.2] Definition 2: The maximum permissible level of a contaminant in water which is delivered to the free flowing outlet of</p>

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<p>the ultimate user of a public water system; except in the case of turbidity where the maximum permissible level is measured at the point of entry to the distribution system. Contaminants added to the water under circumstances controlled by the user, except for those resulting from corrosion of piping and plumbing caused by water quality are excluded from this definition. {OW/TSC} [40 CFR Part 142.2]</p> <p>Acronym: MCL</p>
<p>Maximum Residual Disinfectant Level Goal (regulatory)</p> <p>Definition: The maximum level of a disinfectant added for water treatment at which no known or anticipated adverse effect on the health of persons would occur, and which allows an adequate margin of safety. MRDLGs are nonenforceable health goals and do not reflect the benefit of the addition of the chemical for control of waterborne microbial contaminants. {OW/TSC} [40 CFR Part 141.2]</p> <p>Acronym: MRDLG</p>
<p>Maximum Residual Disinfectant Level (regulatory)</p> <p>Definition: A level of a disinfectant added for water treatment that may not be exceeded at the consumer's tap without an unacceptable possibility of adverse health effects. For chlorine and chloramines, a PWS is in compliance with the MRDL when the running annual average of monthly averages of samples taken in the distribution system, computed quarterly, is less than or equal to the MRDL. For chlorine dioxide, a PWS is in compliance with the MRDL when daily samples are taken at the entrance to the distribution system and no two consecutive daily samples exceed the MRDL. MRDLs are enforceable in the same manner as maximum contaminant levels under Section 1412 of the Safe Drinking Water Act. There is convincing evidence that addition of a disinfectant is necessary for control of waterborne microbial contaminants. Notwithstanding the MRDLs listed in §141.65, operators may increase residual disinfectant levels of chlorine or chloramines (but not chlorine dioxide) in the distribution system to a level and for a time necessary to protect public health to address specific microbiological contamination problems caused by circumstances such as distribution line breaks, storm runoff events, source water contamination, or cross-connections. {OW/TSC} [40 CFR Part</p>

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<p>141.2] Acronym: MRDL</p>
<p>Measurement Quality Objectives</p> <p>Definition: Qualitative and quantitative statements of the overall level of uncertainty that a decision maker is willing to accept in results or decisions derived from measurements. MQOs/DQOs provide the statistical framework for planning and managing measurement plans consistent with the data user's needs. {ORD} {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS} {ORCR}</p> <p>Acronym: MQOs</p>
<p>Media</p>
<p>Median</p> <p>Definition: The middle number or center value of a set of data in which all the data are arranged in sequence. {ORD} {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS} {OECA} {ORCR}</p>
<p>Medium</p> <p>Definition: The middle number or center value of a set of data in which all the data are arranged in sequence. {ORD} {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS} {OECA} {ORCR}</p>
<p>Method</p> <p>Definition 1: See Test Method. Definition 2: Logical sequence of operations, described generically, used in the performance of measurements. {ORD} {OW/EAD} {OAR/OAQPS} {ORCR}</p>

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<p>Method Blank</p> <p>Definition 1: A sample of a matrix similar to the batch of associated samples (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences are present at concentrations that impact the analytical results for sample analyses. {ORD} {OPP} {OAR/OAQPS} {OECA} {ORCR} Definition 2: An aliquot of reagent water that is treated exactly as a sample including exposure to all glassware, equipment, solvents, reagents, labeled compounds, internal standards, and surrogates that are used with samples. The method blank is used to determine if analytes or interferences are present in the laboratory environment, the reagents, or the apparatus. Also, referred to as a reagent blank. {OW/EAD} {OAR/OAQPS} {ORCR} Definition 3: Method blanks are analyzed to assess background interference or contamination that exists in the analytical system that might lead to the reporting of elevated concentration levels or false positive data. The method blank is defined as an interference-free blank matrix, similar to the sample matrix, to which all reagents are added in the same volumes or proportions as used in sample preparation and carried through the complete sample preparation, cleanup, and determinative procedures. For aqueous analyses, analyte-free reagent water would typically be used. For soil analyses, a purified solid matrix (e.g., Ottawa sand, diatomaceous earth) would typically be used, except for metals analyses. Method blank results are evaluated in conjunction with other QC information to determine the acceptability of the data generated for that batch of samples. MBs are generally considered to be acceptable if target analyte concentrations are less than one half the LLOQ or are less than project-specific requirements. Otherwise, corrective actions may be considered to be taken. A method blank is included with the analysis of every analytical batch of 20 samples or less or as stated in the QAPP or method, whichever is more frequent.{ORCR}</p>
<p>Method Detection Limit</p> <p>Definition 1: The method detection limit (MDL) is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a</p>

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<p>given matrix containing the analyte. {OW/EAD} {OPP} {OPP} Definition 2: See definition for Limit of Detection/Detection Limit/Method Detection Limits. {ORD} {OPP}</p> <p>Acronym: MDL</p>
<p>Method Reagent</p>
<p>Method Reagent Blank</p> <p>Definition: See Reagent Blank</p>
<p>Minimum Level</p> <p>Definition: A minimum level at which the analytical system shall give recognizable mass spectra (background corrected) and acceptable calibration points. (see 49 FR 43234, October 26, 1984) {OW/EAD} {ORCR}</p> <p>Acronym: ML</p>
<p>Minimum Reporting Level</p> <p>Definition: The minimum concentration that can be reported as a quantitated value for a target analyte in a sample following analysis. This defined concentration can be no lower than the concentration of the lowest calibration standard for that analyte, and can only be used if acceptable quality control criteria for the analyte at this concentration are met. {ORD} {OW/EAD} {OPP} {ORCR}</p> <p>Acronym: MRL</p>
<p>Minimum Reporting Level (regulatory)</p> <p>Definition: The value and unit of measure at or above which the concentration of the contaminant must be measured using the</p>

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<p>approved analytical methods. The MRL is the minimum concentration of each analyte that must be reported to EPA. The MRL is an estimate of the quantitation limit. Assuming good instrumentation and experienced analysts, an MRL is achievable, with 95% confidence, by 75% of laboratories nationwide. {OW/TSC} [40 CFR 141.40]</p> <p>Acronym: MRL</p>
<p>Multi-laboratory Procedure Study</p> <p>Definition: A study where multiple laboratories individually perform estimates of accuracy, precision, and/or detection limits and those individual estimates are summarized in some fashion (e.g. averaging, upper or lower confidence intervals) to characterize some measure of how well the analytical method performs in qualified laboratories. {OW/EAD} {OAR/OAQPS} {ORCR}</p>
<p>National Environmental Laboratory Accreditation Conference</p> <p>Definition: A voluntary organization of State and Federal environmental officials and interest groups purposed primarily to establish mutually acceptable standards for accrediting environmental laboratories. {ORD} {OW/EAD} {OAR/OAQPS}</p> <p>Acronym: NELAC</p>
<p>National Environmental Laboratory Accreditation Program</p> <p>Definition: The overall National Environmental Laboratory Accreditation Program of which NELAC is a part. {ORD} {OW/EAD} {OAR/OAQPS}</p> <p>Acronym: NELAP</p>
<p>Native Compound</p> <p>Definition 1: A molecule in which the atoms all have naturally occurring isotopic abundances. {OW/EAD} {OPP} Definition 2: A</p>

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compound that is present in a sample without addition by the laboratory. {ORD} {OAR/OAQPS} {ORCR}
<p>NIST Standard Reference Material</p> <p>Definition: A Certified Reference Material (CRM) issued by the National Institute of Standards and Technology (NIST) that also meets additional NIST-specific certification criteria and is issued with a certificate or certificate of analysis that reports the results of its characterizations and provides information regarding the appropriate use(s) of the material. An SRM is prepared and used for three main purposes: (1) to help develop accurate methods of analysis; (2) to calibrate measurement systems used to facilitate exchange of goods, institute quality control, determine performance characteristics, or measure a property at the state-of-the-art limit; and (3) to ensure the long-term adequacy and integrity of measurement quality assurance programs. {OW/TSC}</p> <p>Acronym: NIST SRM</p>
<p>Ongoing Precision and Recovery Standard</p> <p>Definition: A method blank spiked with known quantities of analytes. Its purpose is to assure that the results produced by the laboratory remain within the limits specified in this method for precision and recovery. Also, referred to as a Laboratory Fortified Blank (LFB), Spiked Blank, or Laboratory Control Sample (LCS). {OW/EAD}</p> <p>Acronym: OPR</p>
<p>Outlier</p> <p>Definition: An observation that is shown to have a low probability of belonging to a specified data population; any item rejected by the sampler, analyst, or data reviewer, usually accompanied by an attendant explanation. {ORD} {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS} {OECA} {ORCR}</p>
<p>Percent Relative Standard Deviation</p>

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<p>Definition: The standard deviation expressed as a percentage of the mean (i.e., the coefficient of variation). Mathematically, it is the standard deviation divided by the mean times one hundred percent. {ORD} {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS} {OECA} {ORCR}</p> <p>Acronym: %RSD</p>
<p>Performance Based Measurement System</p> <p>Definition: A set of processes wherein the data quality needs, mandates, or limitations of a program or project are specified, and serve as criteria for selecting appropriate methods to meet those needs in a cost-effective manner. {ORD} {OPP} {OAR/OAQPS} {ORCR}</p> <p>Acronym: PBMS</p>
<p>Performance Evaluation Sample (regulatory)</p> <p>Definition: A reference sample provided to a laboratory for the purpose of demonstrating that the laboratory can successfully analyze the sample within limits of performance specified by the Agency. The true value of the concentration of the reference material is unknown to the laboratory at the time of the analysis. {OW/TSC} [40 CFR Part 141.2]</p> <p>Acronym: PE</p>
<p>Practical Quantitation Level</p> <p>Definition 1: The lowest concentration that can be reliably measured within specified limits of precision and accuracy for a specific laboratory analytical method during routine laboratory operating conditions. {OPP} Definition 2: The lowest concentration that can be reliably measured within specified limits of precision and accuracy for a specific laboratory analytical method during routine laboratory</p>

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<p>operating conditions. Although the LOQ is useful within a laboratory, the practical quantitation limit (PQL) has been proposed as the lowest level achievable among laboratories within specified limits during routine laboratory operations. Definition 3: The PQL is significant because different laboratories will produce different MDLs even though using the same analytical procedures, instruments, and sample matrices. The PQL is about five times the MDL and represents a practical and routinely achievable detection level with a relatively good certainty that any reported value is reliable. {OW/TSC}</p> <p>Acronym: PQL</p>
<p>Precision</p> <p>Definition: The consistency of measurement values quantified by measures of dispersion such as the sample standard deviation. Precision must be defined in context e.g., for a certain analyte, matrix, method, perhaps concentration, lab or group of labs. {ORD} {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS} {OECA} {ORCR}</p>
<p>Preparation Blank</p> <p>Definition: See Method Blank. {OW/EAD} Preferred Term: Method Blank</p>
<p>Primary Calibration Standard</p> <p>Definition: A suspension prepared from the primary dilution stock standard suspension. The PCAL suspensions are used to calibrate the instrument response with respect to analyte concentration. {OW/TSC}</p> <p>Acronym: PCAL</p>
<p>Primary Dilution Standard</p> <p>Definition 1: A solution containing method analytes prepared in the laboratory from Stock Standard Solutions. The PDS is diluted to</p>

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prepare calibration standards, sample fortification solutions and other needed analyte solutions. Definition 2: A solution containing method analytes, internal standards, or surrogate analytes prepared in the laboratory from stock standard solutions and diluted as needed to prepare calibration solutions and other analyte solutions. {OW/TSC} Acronym: PDS
Procedural Standard Definition: An aqueous calibration standard prepared and processed (e.g., purged, extracted, and/or derivatized) in exactly the same manner as a sample. All steps in the process from addition of sampling preservatives through instrumental analyses are included in the calibration. {OW/TSC}
Procedural Standard Calibration Definition: Preparing a calibration curve using procedural standards. Using procedural standard calibration compensates for any inefficiency in the processing procedure. {OW/TSC}
Proficiency Testing (PT) Sample Definition: See Performance Evaluation Sample (regulatory). {OW/TSC} Acronym: PT Sample
Proficiency Testing Sample Definition: See Performance Evaluation Sample (regulatory). {OW/TSC} Acronym: PT Sample
Protocol

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<p>Definition: A detailed written procedure for field and/or laboratory operation (e.g., sampling, analysis), which must be strictly followed. {OAR/OAQPS}</p>
<p>Quality Assurance</p> <p>Definition: An integrated system of management activities involving planning, implementation, documentation, assessment, reporting, and quality improvement to ensure that a process, item, or service is of the type and quality needed and expected by the client. {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS} {OECA} {ORCR}</p>
<p>Quality Assurance Audits</p> <p>Definition: A systematic and independent examination to determine whether quality activities and related results comply with planned arrangements and whether these arrangements are implemented effectively and are suitable to achieve objectives. {OW/EAD}{OW/TSC}</p>
<p>Quality Assurance Project Plan</p> <p>Definition: A formal document describing in comprehensive detail the necessary quality assurance, quality control, and other technical activities that should be implemented to ensure that the results of the work performed will satisfy the stated performance criteria. {ORD} {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS} {OECA} {ORCR}</p> <p>Acronym: QAPP</p>
<p>Quality Control</p> <p>Definition: The overall system of technical activities that measures the attributes and performance of a process, item, or service</p>

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<p>against defined standards to verify that they meet the stated requirements established by the customer; operational techniques and activities that are used to fulfill requirements for quality. {ORD} {OPP} {OW/TSC} {OAR/OAQPS} {OECA} {ORCR} {OW/EAD}</p>
<p>Quality Control Check Sample (calibration)</p> <p>Definition: See Quality Control Sample Acronym: QCS</p>
<p>Quality Control Check Sample (quality)</p> <p>Definition: A sample containing all or a subset of the analytes at known concentrations. The QCS is obtained from a source external to the laboratory or is prepared from a source of standards different from the source of calibration standards. It is used to check laboratory performance with test materials prepared external to the normal preparation process. {OW/EAD} {OW/TSC} Acronym: QCS</p>
<p>Quality Control Sample (calibration)</p> <p>Definition 1: A solution containing the method analytes at a known concentration that are is obtained from a source external to the laboratory and different from the source of calibration standards. The purpose of the QCS is to verify the accuracy of the primary calibration standards. {OW/TSC} Definition 2: See Quality Term Section for an alternative definition. {ORD} {OECA} {ORCR} Definition 3: A sample containing all or a subset of the analytes at known concentrations. The QCS is obtained from a source external to the laboratory or is prepared from a source of standards different from the source of calibration standards. It is used to check laboratory performance with test materials prepared external to the normal preparation process. {OW/EAD} Acronym: QCS</p>
<p>Quality Control Sample (quality)</p>

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<p>Definition 1: An uncontaminated sample matrix spiked with known amounts of analytes from a source independent from the calibration standards. It is generally used to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. This does not include matrix spikes or laboratory duplicates, which are also QC samples. {OW/EAD} Definition 2: A solution of method analytes of known concentrations that is used to fortify an aliquot of Laboratory Reagent Blank (LRB) or sample matrix. The QCS is obtained from a source external to the laboratory is different from the source of calibration standards. It is used to check laboratory performance with externally prepared test materials. This is a Performance Evaluation Sample in other arenas. {ORD}</p> <p>Acronym: QCS</p>
<p>Quality Control Sample (quantitation limit)</p> <p>Definition 1: A sample made from standards or matrix and used to verify acceptability of the results for an analytical batch. Examples of quality control samples are method blanks, laboratory duplicates, laboratory control samples, and matrix spikes. {ORD} {OECA} {ORCR} Definition 2: See Quality Term Section for an alternative definition. {OW/EAD} {OW/TSC}</p> <p>Acronym: QCS</p>
<p>Quantification Limit</p> <p>Definition: The lowest concentration of an analyte that meets all method-defined criteria for qualitative and quantitative identification. It is commonly set at the lowest calibration standard concentration. {OLEM/OSRTI}</p> <p>Acronym: LQ</p>
<p>Quantitation versus Quantification</p>

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<p>Definition: These are considered equivalent and can be used interchangeably. Both are commonly used in the literature. {ORD} {OPP} {ORCR}</p>
<p>Range</p>
<p>Definition: The difference between the minimum and the maximum of a set of values. {ORD} {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS} {OECA} {ORCR}</p>
<p>Reagent Blank</p>
<p>Definition 1: A sample consisting of reagent(s), without the target analyte or sample matrix, introduced into the analytical procedure at the appropriate point and carried through all subsequent steps to determine the contribution of the reagents and of the involved analytical steps. Definition 2: A sample consisting of reagent(s), without the target analyte or sample matrix, introduced into the analytical procedure at the appropriate point and carried through all subsequent steps to determine the contribution of the reagents and of the involved analytical steps to error in the observed value. {OPP} {OAR/OAQPS} Definition 3: See Method Blank. {OW/EAD}</p>
<p>Reagent Water</p>
<p>Definition: Water demonstrated to be free from the analytes of interest and potentially interfering substances at the method detection limit for the analyte. {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS} {OECA} {ORCR}</p>
<p>Recovery</p>
<p>Definition: The degree to which a methodology measures all of the analyte contained in a sample, often expressed in percent recovered. {ORD} {OW/EAD} {OW/TSC} {OAR/OAQPS} {OECA} {ORCR}</p>
<p>Recovery Efficiency</p>

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Term
<p>Definition: The fraction or percentage of a target analyte measured in a sample to which a known amount of the analyte has been added. {ORD} {OPP} {OAR/OAQPS} {ORCR}</p>
<p>Reference Material</p> <p>Definition: A material or substance, one or more properties of which are sufficiently well established to be used for the calibration of an apparatus, the assessment of a measurement method, or assigning values to materials. {ORD} {OW/EAD} {OECA} {ORCR}</p>
<p>Replicate Analyses</p> <p>Definition: The measurements of the variable of interest performed identically on two or more sub-samples of the same sample within a short time interval. {ORD} {OW/EAD} {OPP} {OAR/OAQPS} {OECA} {ORCR}</p>
<p>Reporting Limit</p> <p>Definition 1: The minimum value below which data are documented as non-detects. {OW/TSC} {OECA} {ORCR} Definition 2: The minimum value of the calibration range. Analyte detections between the detection limit and the reporting limit are reported as having estimated concentrations. {ORD} {ORCR}</p>
<p>Residual Disinfectant Concentration (regulatory)</p> <p>Definition: The concentration of disinfectant measured in mg/L in a representative sample of water. {OW/TSC} [40 CFR Part 141.2] Acronym: CT calculations</p>
<p>Sample</p>

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<p>Definition: A part of a larger whole or a single item of a group; a finite subset of a statistical population. A representative sample serves to provide data or information concerning the properties of the whole group or population. {OW/EAD} {OPP} {OAR/OAQPS} {ORCR}</p>
<p>Second Source Calibration Standard</p>
<p>Definition: A standard obtained or prepared from a source independent of the source of standards for the initial calibration that is used to verify the correctness of a calibration. The second source standard is used to prepare the Independent Calibration Verification sample. {ORD}</p>
<p>Secondary Calibration Standard (turbidity)</p>
<p>Definition: Commercially prepared, stabilized sealed liquid or gel turbidity standards calibrated against properly prepared and diluted formazin or styrene divinylbenzene polymers. {OW/TSC}</p> <p>Acronym: SCAL</p>
<p>Secondary Maximum Contaminant Level (regulatory)</p>
<p>Definition: These apply to public water systems and which, in the judgement of the Administrator, are requisite to protect the public welfare. The SMCL means the maximum permissible level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of public water system. Contaminants added to the water under circumstances controlled by the user, except those resulting from corrosion of piping and plumbing caused by water quality, are excluded from this definition. {OW/TSC} [40 CFR Part 143.2]</p> <p>Acronym: SMCL</p>
<p>Sensitivity</p>

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<p>Definition 1: Sensitivity generally refers to the capability of a method or instrument to discriminate between small differences in analyte concentration. {OPP} {OAR/OAQPS} {ORCR} {OW/TSC} Definition 2: A qualitative description of an instrument's or analytical method's detection limit. {ORD}</p>
<p>Signal-to-Noise Ratio</p> <p>Definition: The height of the signal as measured from the mean (average) of the noise to the peak maximum divided by the amplitude of the noise. {ORD} {OW/EAD} {OPP} {OW/TSC} {ORCR}</p> <p>Acronym: S/N</p>
<p>Single Blind</p> <p>Definition 1: A sample submitted to evaluate performance with concentration and identity unknown to the analyst. {OW/EAD} {ORCR}</p> <p>Definition 2: A blind sample in which the concentration is unknown to the analyst, but is known to the provider. {OPP}</p>
<p>Spectral Interference Check Solution</p> <p>Definition: A solution of selected method analytes of higher concentrations which is used to evaluate the procedural routine for correcting known interelement spectral interferences with respect to a defined set of method criteria. {OW/TSC}</p> <p>Acronym: SIC Solution</p>
<p>Spike</p> <p>Definition 1: A known quantity of an analyte added to a sample for the purpose of determining recovery or efficiency (analyst spikes), or for quality control (blind spikes). {OW/EAD} {OPP} {OAR/OAQPS} {ORCR} Definition 2: A known quantity of an analyte added to a</p>

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sample for the purpose of determining recovery or efficiency. {ORD} {OECA}
<p>Spiked Blank</p> <p>Definition: See Laboratory Control Sample or OPR. {OW/EAD} Preferred Term: Laboratory Control Sample, OPR</p>
<p>Standard Addition</p> <p>Definition: The addition of a known amount of analyte to the sample in order to determine the relative response of the detector to an analyte within the sample matrix. The relative response is then used to assess either an operative matrix effect or the sample analyte concentration. {ORD} {OW/EAD} {OPP} {OAR/OAQPS} {ORCR} {OW/TSC}</p>
<p>Standard Deviation</p> <p>Definition: A computed measure of variability indicating the spread of the data set around the mean. {ORD} {OPP} {OW/TSC} {OAR/OAQPS} {OECA} {ORCR}</p>
<p>Standard Operating Procedures</p> <p>Definition 1: A written document outlining an analytical method which provides a level of detail intended to allow advanced analysts or analysts familiar with the method outlined in the SOP to perform that analytical method. {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS} {OECA} {ORCR} Definition 2: A written document which details the method of an operation, analysis or action whose techniques and procedures are thoroughly prescribed and which is accepted as the method for performing certain routine or repetitive tasks. {ORCR}</p> <p>Acronym: SOPs</p>
<p>Standard Sample (regulatory)</p>

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Definition: The aliquot of finished drinking water that is examined for the presence of coliform bacteria. {OW/TSC} [40 CFR Part 141.2]
Standard Solutions
Definition: When a compound purity is assayed to be 96% or greater, the weight can be used without correction to calculate the concentration of the stock standard. Solution concentrations listed in this section were used to develop this method and are included as an example. Standards for sample fortification generally should be prepared in the smallest volume that can be accurately measured to minimize the addition of organic solvent to aqueous samples. Laboratories should use standard QC procedures to determine when Standard Solutions described in this section need to be replaced. {OW/TSC}
Standard Uncertainty
Definition: Uncertainty of the result of a measurement expressed as a standard deviation. {ORD} {OW/EAD} {OPP} {ORCR}
Stock Solution
Definition: A solution containing an analyte that is prepared using a reference material traceable to EPA, the National Institute of Science and Technology (NIST), or a source that will attest to the purity and authenticity of the reference material. {ORD} {OW/EAD} {OPP} {OAR/OAQPS} {ORCR}
Stock Standard Solution
Definition: A concentrated standard solution that is prepared in the laboratory using assayed reference materials or that is purchased from a commercial source with a certificate of analysis. {OW/TSC}
Stock Standard Suspension

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<p>Definition: A concentrated suspension containing the analyte prepared in the laboratory using assayed reference materials or purchased from a reputable commercial source. Stock standard suspension is used to prepare calibration suspensions and other needed suspensions. {OW/TSC}</p> <p>Acronym: SSS</p>
<p>Surrogate Analyte</p> <p>Definition: A pure chemical which is unlikely to be found in any sample, and which is added to a sample volume in a known amount before extraction. Surrogates are evaluated using the same procedures as other sample components. Because surrogates are present in every sample, they provide a means of assessing method performance for each sample extraction. {OW/TSC}</p> <p>Acronym: SUR</p>
<p>Surrogate Standard</p> <p>Definition: A non-target analyte that has similar chemical properties to the analyte of interest. The surrogate standard is added to the sample in a known amount and used to evaluate the response of the analyte to preparation and analysis procedures. {ORD} {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS} {OECA} {ORCR}</p>
<p>Systematic Planning</p> <p>Definition 1: EPA uses systematic planning to plan projects and link goals, cost and schedule, and quality criteria with the final outputs. Systematic planning ensures that all participants understand the needs and expectations of the customer and the product or results to be provided by the supplier. {ORD} {OPP} {OAR/OAQPS} {ORCR} Definition 2: A planning process that is based on the scientific method and is based on a common sense, graded approach to ensure that the level of detail in planning is commensurate</p>

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<p>with the importance and intended use of the work and the available resources. A systematic planning process is performed to ensure that all organizations and/or parties who contribute to the quality of the environmental program or use the results are identified and that they participate in this process. The systematic planning process also provides for direct communication between the customer and the supplier to ensure that there is a clear understanding by all participants of the needs and expectations of the customer and the product or results to be provided by the supplier. {OW/EAD}</p>
<p>Technical Systems Audit</p> <p>Definition 1: A thorough, systematic, on-site, qualitative audit of facilities, equipment, personnel, training, procedures, record keeping, data validation, data management, and reporting aspects of a system. {ORD} Definition 2: A technical audit or assessment is a systematic and objective examination of a program or project to determine whether environmental data collection activities and related results comply with the project's quality assurance project plan and other planning documents, are implemented effectively, and are suitable to achieve its data quality goals. {OPP} {OAR/OAQPS} {ORCR} Definition 3: A thorough, systematic, on-site, qualitative audit of facilities, equipment, personnel, training, procedures, record keeping, data validation, data management, and reporting aspects of program or project to determine whether environmental data collection activities and related results comply with the project's quality assurance project plan and other planning documents, are implemented effectively, and are suitable to achieve its data quality goals. {OW/EAD}</p>
<p>Test Method</p> <p>Definition: An adoption of a scientific technique for a specific measurement problem, as documented in a laboratory SOP or published by a recognized authority. {OW/EAD} {OPP} {OAR/OAQPS} {ORCR}</p>
<p>Too Numerous to Count (regulatory)</p>

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<p>Definition: The total number of bacterial colonies exceeds 200 on a 47-mm diameter membrane filter used for coliform detection. {OW/TSC} [40 CFR Part 141.2]</p>
<p>Total Recoverable Analyte</p> <p>Definition 1: The concentration of analyte determined to be in either a solid sample or an unfiltered aqueous sample following treatment by refluxing with hot dilute mineral acid. Definition 2: The concentration of analyte determined by the analysis of an unfiltered acid preserved drinking water sample following digestion by refluxing with hot dilute mineral acid(s) as specified in the method. Data are reported as a “total” element determination - the combined concentrations of the dissolved and suspended fractions of the sample. Definition 3: The concentration of analyte determined by either “direct analysis” of an unfiltered acid preserved drinking water sample with turbidity <1 NTU, or by analysis of the solution extract of a solid sample or an unfiltered aqueous sample following digestion by refluxing with hot mineral acid(s) as specified in the method. {OW/TSC}</p>
<p>Treatment Technique Requirement (regulatory)</p> <p>Definition: A requirement of the national primary drinking water regulations which specifies for a contaminant a specific treatment technique(s) known to the Administrator which leads to a reduction in the level of such contaminant sufficient to comply with the requirements of part 141 of this chapter. {OW/TSC} [40 CFR Part 142.2]</p> <p>Acronym: TT</p>
<p>Trip Blank</p> <p>Definition: A clean sample of a matrix that is taken from the laboratory to the sampling site and transported back to the laboratory without having been exposed to sampling procedures. The sample is not opened in the field. (Typically required when analyzing for volatile compounds.) The purpose of the trip blank is to assess contamination introduced during shipping and storage. {OW/TSC}</p>

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<p>Tuning Solution</p> <p>Definition: A solution which is used to determine acceptable instrument performance prior to calibration and sample analysis. {OW/TSC}</p>
<p>Type I Error</p> <p>Definition: See Alpha and False Positive. {ORD} {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS} {ORCR} Preferred Term: False Positive</p>
<p>Type II Error</p> <p>Definition: See Beta and False Negative. {ORD} {OW/EAD} {OPP} {OW/TSC} {OAR/OAQPS} {ORCR} Preferred Term: False Negative</p>
<p>Uncensored Method</p> <p>Definition: Analytical methods that nearly always produce numerical values that meet qualitative identification criteria for method blanks. {OW/EAD}</p>
<p>Uncertainty</p> <p>Definition 1: The range of values that contains the true value of what is being evaluated at some level of confidence. {OW/EAD} {OPP} {OAR/OAQPS} {OW/TSC} Definition 2: A measure of the total variability associated with sampling and measuring that includes the two major error components: systematic error (bias) and random error. {ORD} {OECA} {ORCR}</p>
<p>Uncertainty, Counting (radiochemistry)</p>

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Definition: The component of measurement uncertainty attributable to the random nature of radioactive decay and radiation counting. {OW/TSC}
Uncertainty, Expanded
Definition: Quantity defining an interval about the result of a measurement that may be expected to encompass a large fraction of the distribution of values that could reasonably be attributed to the measurement. {OAR/ORIA/NAREL}
Uncertainty of Measurement
Definition: A parameter associated with the result of a measurement that characterizes the dispersion of the values that could reasonably be attributed to the measurement. {OW/EAD} {OECA} {ORCR}
Uncertainty, Standard (radiochemistry)
Definition: An estimate of the measurement uncertainty expressed as a standard deviation. {OW/TSC}
Unit of Measurement
Definition: Units used to define the amount of something, e.g., mg/L (chemistry), pCi/L and mrem/year (radiochemistry), and MFL (asbestos). {OW/TSC}
Variability During Routine Operations
Definition: Changes during the routine running of samples that might contribute to variability of results. This might include instrument drift through the course of the day due to changes in the ion source (such as contamination from running samples), differences in performance of instruments used for the same analysis, difference in technique for different analysts, etc. {OW/EAD} {ORCR}