



# Standard Practice for Estimation of Holding Time for Water Samples Containing Organic Constituents<sup>1</sup>

This standard is issued under the fixed designation D 4515; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This practice describes the means of estimating the period of time during which a water sample can be stored after collection and preservation without significantly affecting the accuracy of analysis.

1.2 The maximum holding time is highly matrix-dependent and is also dependent on the specific analyte of interest. Therefore, water samples from a specific source must be tested to determine the period of time that sample integrity is maintained by standard preservation practices.

1.3 In those cases where it is not possible to analyze the sample immediately at the time of collection, this practice does not provide information regarding degradation of the constituent of interest or changes in matrix that may occur from the time of sample collection to the time of the initial analysis.

1.4 This practice does not provide information regarding holding time for concentration of analyte less than one order of magnitude above the criterion of detection.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

## 2. Referenced Documents

### 2.1 ASTM Standards:

D 1129 Terminology Relating to Water<sup>2</sup>

D 1193 Specification for Reagent Water<sup>2</sup>

D 2777 Practice for Determination of Precision and Bias of Applicable Methods of Committee D-19 on Water<sup>2</sup>

D 3694 Practices for Preparation of Sample Containers and for Preservation of Organic Constituents<sup>3</sup>

## 3. Terminology

3.1 *Definitions*—For definitions of terms used in this practice, refer to Terminology D 1129.

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee D19 on Water and is the direct responsibility of Subcommittee D19.06 on Methods for Analysis for Organic Substances in Water.

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 11.01.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 11.02.

## 3.2 Definitions of Terms Specific to This Standard:

3.2.1 *acceptable holding time*—acceptable holding time is any period of time less than or equal to the maximum holding time.

3.2.2 *maximum holding time*—maximum holding time is the maximum period of time during which a properly preserved sample can be stored before such degradation of the constituent of interest occurs or change in sample matrix occurs that the systematic error exceeds the 99 % confidence interval (not to exceed 15 %) of the test about the mean concentration found at zero time.

## 4. Summary of Practice

4.1 Holding time is estimated by means of replicate analysis at discrete time intervals of a large volume of a water sample that has been properly collected and preserved. Concentration of the constituent of interest is plotted versus time. The maximum holding time is the period of time from sample collection to such time that degradation of the constituent of interest occurs or change in sample matrix occurs that the systematic error exceeds the 99 % confidence interval (not to exceed 15 %) of the test about the mean concentration at zero time. Prior to determination of holding time, each laboratory must generate its own precision data for use in the calculation. For those tests which are relatively imprecise, replicate determinations are performed at each time interval to maintain the 99 % confidence interval within 15 % of the concentration found at zero time.

NOTE 1—This practice generates only limited data that may not lead to consistent conclusions each time the test is applied. In cases where the concentration of the constituent of interest changes very gradually over an extended period of time, the inherent variability in test results may lead to somewhat different conclusions each time that the practice is applied.

## 5. Significance and Use

5.1 In order to obtain meaningful analytical data, sample preservation techniques must be effective from the time of sample collection to the time of analysis. This period of time must be defined in order that the analyst may know how long samples may be stored prior to analysis.