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AMERICAN SOCIETY FOR TESTING AND MATERIALS
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Standard Practice for the Preparation of Substitute Wastewater[1]

This standard is issued under the fixed designation D 5905; 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.

ε[1] NOTE—The title of this standard was editorially corrected in February 1999.

1. Scope

1.1 This practice covers the preparation of an aqueous mixture containing constituents in concentrations such that it will have physical and chemical matrix characteristics similar to municipal wastewater.

1.2 Wastewaters are extremely variable, depending on the quantity and nature of the materials being discharged into the collection system. The mixture prepared with this practice is not representative of any particular wastewater. Rather, it allows the user to prepare a mixture that exhibits a similar matrix impact on test method performance as is typical of municipal wastewater and can be prepared from common materials inexpensively and reproducibly. It allows the evaluation of test methods, over time, against the same reference point.

1.3 *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[2]
D 1141 Specification for Substitute Ocean Water[3]
D 1193 Specification for Reagent Water[2]
D 2777 Practice for Determination of Precision and Bias of Applicable Methods of Committee D-19 on Water[2]

3. Terminology

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

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *substitute wastewater*—a mixture of dissolved and suspended materials in water, typical of the influent to a municipal wastewater treatment facility.

4. Significance and Use

4.1 Substitute wastewater may be used for laboratory testing where a reproducible mixture simulating municipal wastewater is required. To provide a more rugged evaluation of a test method's ability to measure analytes and the precision of the test method under more demanding conditions, it is necessary to utilize a matrix more complex than reagent water. Substitute wastewater is intended to be used as a material to be spiked with analytes or interferents of interest to evaluate the performance of test methods.

4.2 Utilization of substitute wastewater as a matrix in interlaboratory validation studies will allow inclusion of performance statistics for this matrix in the Precision and Bias section of test methods. Users of test methods will be able to evaluate their application of test methods in this matrix against published results.

5. Apparatus

5.1 *Blender*, household or commercial variety, with a chemically inert container and a tight sealing lid.

6. Reagents

6.1 *Purity of Reagents*—Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society where such specifications are available.[4] Other grades may be used, provided it is first ascertained that the reagent is of sufficiently high purity to permit its use without lessening the accuracy of determination.

6.2 *Purity of Water*—Unless otherwise indicated, references to water shall be understood to mean reagent water as defined by Type I of Specification D 1193.

6.3 *Kaolin*—USP grade. Dry to constant weight at 103°C before use.

6.4 *Beer*—A commercially produced beverage made by fermenting mixtures of grains, malts, and hops; reduced

[1] This practice is under the jurisdiction of ASTM Committee D-19 on Water and is the direct responsibility of Subcommittee D19.02 on General Specifications, Technical Resources, and Statistical Methods.

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[2] *Annual Book of ASTM Standards*, Vol 11.01.

[3] *Annual Book of ASTM Standards*, Vol 11.02.

[4] *Reagent Chemicals, American Chemical Society Specifications*, American Chemical Society, Washington, DC. For suggestions on the testing of reagents not listed by the American Chemical Society, see *Analar Standards for Laboratory Chemicals*, BDH Ltd., Poole, Dorset, U.K., and the *United States Pharmacopeia and National Formulary*, U.S. Pharmaceutical Convention, Inc. (USPC), Rockville, MD.