Designation: D3415 – 98 (Reapproved 2004)

Standard Practice for Identification of Waterborne Oils[1]

This standard is issued under the fixed designation D3415; 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 covers the broad concepts of sampling and analyzing waterborne oils for identification and comparison with suspected source oils. Detailed procedures are referenced in this practice. A general approach is given to aid the investigator in planning a program to solve the problem of chemical characterization and to determine the source of a waterborne oil sample.

1.2 This practice is applicable to all waterborne oils taken from water bodies, either natural or man-made, such as open oceans, estuaries or bays, lakes, rivers, smaller streams, canals; or from beaches, marshes, or banks lining or edging these water systems. Generally, the waterborne oils float on the surface of the waters or collect on the land surfaces adjoining the waters, but occasionally these oils, or portions, are emulsified or dissolved in the waters, or are incorporated into the sediments underlying the waters, or into the organisms living in the water or sediments.

1.3 This practice as presently written proposes the use of specific analytical techniques described in the referenced ASTM standards. As additional techniques for characterizing waterborne oils are developed and written up as test methods, this practice will be revised.

1.4 *This standard does not purport to address 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:*[2]

D1129 Terminology Relating to Water
D3325 Practice for Preservation of Waterborne Oil Samples
D3326 Practice for Preparation of Samples for Identification of Waterborne Oils
D3328 Test Methods for Comparison of Waterborne Petroleum Oils by Gas Chromatography
D3414 Test Method for Comparison of Waterborne Petroleum Oils by Infrared Spectroscopy
D3650 Test Method for Comparison of Waterborne Petroleum Oils By Fluorescence Analysis
D4489 Practices for Sampling of Waterborne Oils
D4840 Guide for Sample Chain-of-Custody Procedures [3]
D5037 Test Method for Comparison of Waterborne Petroleum Oils by High Performance Liquid Chromatography[4]
D5739 Practice for Oil Spill Source Identification by Gas Chromatography and Positive Ion Electron Impact Low Resolution Mass Spectrometry
E620 Practice for Reporting Opinions of Scientific or Technical Experts

3. Terminology

3.1 *Definitions:*

3.1.1 *waterborne oil*—any oil, whether or not derived from petroleum, carried by a water system (for example, ocean, bay, lake, river, etc.) usually at the surface but occasionally emulsified or dissolved in the water. The waterborne oil can also be found on beaches or banks edging the water body, in the sediments underlying the water, or in the organisms living in the water or in the sediments.

3.2 For definitions of other terms used in this practice, refer to Terminology D1129, and to Practices D3325, D3326, D4489, and D5739, and Test Methods D3328, D3650, and D5037.

4. Significance and Use

4.1 Oil from one crude oil field is readily distinguishable from another, and differences in the makeup of oils from the same crude oil field can often be observed as well. Refined oils are fractions from crude oil stocks, usually derived from distillation processes. Two refined oils of the same type differ because of dissimilarities in the characteristics of their crude oil feed stocks as well as variations in refinery processes and any subsequent contact with other oils mixed in during transfer operations from residues in tanks, ships, pipes, hoses, and so

[1] 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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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] Withdrawn.

[4] Withdrawn. The last approved version of this historical standard is referenced on www.astm.org.

*A Summary of Changes section appears at the end of this standard.