



Standard Practices for Sampling of Waterborne Oils¹

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1. Scope

1.1 These practices describe the procedures to be used in collecting samples of waterborne oils (see Practice D 3415), oil found on adjoining shorelines, or oil-soaked debris, for comparison of oils by spectroscopic and chromatographic techniques, and for elemental analyses.

1.2 Two practices are described. Practice A involves “grab sampling” macro oil samples. Practice B can be used to sample most types of waterborne oils and is particularly applicable in sampling thin oil films or slicks. Practice selection will be dictated by the physical characteristics and the location of the spilled oil. These two practices are:

Practice A (for grab sampling thick layers of oil, viscous oils or oil soaked debris, oil globules, tar balls, or stranded oil)

Sections
9 to 13

Practice B (for TFE-fluorocarbon polymer strip samplers)

14 to 17

1.3 Each of the two practices is designed to collect oil samples with a minimum of water, thereby reducing the possibility of chemical, physical, or biological alteration by prolonged contact with water between the time of collection and analysis.

1.4 *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.* For specific hazards statements, see Section 7.

2. Referenced Documents

2.1 *ASTM Standards:*

D 1129 Terminology Relating to Water²

D 3415 Practice for Identification of Waterborne Oils³

3. Terminology

3.1 *Definitions*—For the definitions of terms used in these practices, refer to Terminology D 1129.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *chain of custody*—a documented accountability of each sample, that is, date, time, and signature of each recipient

¹ These practices are under the jurisdiction of ASTM Committee D19 on Water and are the direct responsibility of Subcommittee D19.06 on Methods for Analysis for Organic Substances in Water.

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

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

when the sample changes hands, from the time of collection until the requirement for each sample is terminated.

3.2.2 *waterborne oil*—refer to Practice D 3415.

4. Significance and Use

4.1 Identification of the source of a spilled oil is established by comparison with known oils selected because of their possible relationship to the spill, that is, potential sources. Generally, the suspected source oils are from pipelines, tanks, etc., and therefore pose little problems in sampling compared to the spilled oil. This practice addresses the sampling of spilled oils in particular, but could be applied to appropriate source situations, for example, a ship's bilge.

5. Apparatus

5.1 *Sample Containers*, 100 to 125-mL wide-mouth glass jars that have been thoroughly cleaned. When field expedients must be employed, an empty container of each type used should be included in the shipment to the laboratory, to be used as a blank to measure inadvertent contamination.

5.2 *Closures*—Lids for the glass jars should have TFE-fluorocarbon polymer film or aluminum-coated insert.

5.3 *Strip Samplers*, 5 by 7.5 cm pieces of TFE-fluorocarbon polymer sheets (0.25 mm thickness, or screen or fabric (50–70 mesh)).

5.4 *Wooden Tongue Depressor*.

5.5 *TFE-Fluorocarbon Polymer Net Sampling Kit*.⁴

6. Reagents

6.1 *High Purity Solvents*,⁵ that must be used for rinsing samplers and sample containers. The solvents which may be used are *n*-hexane, mixed hexanes, cyclohexane, pentane, or dichloromethane, acetone, or chloroform.

7. Hazards

7.1 **Precaution:** Extreme care should be exercised so as not to contaminate the samples or cause their integrity to be questioned.

7.2 **Warning:** The rinsing solvents are volatile and, except for dichloromethane, are flammable, and therefore should be

⁴ Sampling kit available from General Oceanics, Miami, FL, or equivalent, is suitable.

⁵ MCB Spectroquality solvents, available from MCB Manufacturing Chemists, Inc. (Associate of E. Merck, Darmstadt, Germany), 480 Democrat Rd., Gibbstown, NJ 08027, or equivalent are suitable.