

This Research Report is issued under the fixed designation RR: D19-2002. You agree not to reproduce or circulate or quote, in whole or part, this document outside of ASTM International Committee/Society activities, or submit it to any other organization or standards body (whether national, international or other) except with the approval of the Chair of the Committee having jurisdiction and the written authorization of the President of the Society. If you do not agree to these conditions, please immediately destroy all copies of this document. *Copyright ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428. All rights reserved.*

1 May 2022

**Committee D19 on Water
Subcommittee D19.06 on Methods for Analysis for Organic Substances
in Water**

Research Report: D19-2002

**Intralaboratory Study to Establish Precision Statements for ASTM
D8431-22, Test Method for Detection of Water-soluble Petroleum Oils
by A-TEEM Optical Spectroscopy and Multivariate Analysis**

Technical contact:

Linxi Chen,
HORIBA Scientific
20 Knightsbridge Rd
Piscataway, NJ 08854
USA
linxi.chen@horiba.com

ASTM International
100 Barr Harbor Drive
West Conshohocken, PA 19428-2959

Table of Contents

1. Introduction/ Background:	3
2. Test Method:.....	3
3. Participating Laboratory:.....	3
4. Description of Samples:	3
5. Interlaboratory Study Instructions.....	4
6. Description of Equipment/Apparatus:.....	4
7. Data Report Forms:	4
8. Statistical Data Summary:	4
9. Precision and Bias Statement:	4
Annex A: Interlaboratory Study Instructions	11
Annex B: Description of Equipment/Apparatus.....	14
Annex C: Raw Data	16

1. Introduction/ Background:

Intralaboratory Study 1685 was conducted to establish a precision statement for D8431, Standard Test Method for Detection of Water-Soluble Petroleum Oils by A-TEEM Optical Spectroscopy and Multivariate Analysis.

2. Test Method:

The Test Method used for this ILS is D8431-22. To obtain a copy of D8431, go to ASTM's website, www.astm.org, or contact ASTM Customer Service by phone at **610-832-9585** (8:30 a.m. - 6:00 p.m. Eastern U.S. Standard Time, Monday through Friday) or by email at service@astm.org.

3. Participating Laboratory:

The following laboratory participated in this intralaboratory study:

Philadelphia Water Department
Bureau of Laboratory Services
Joseph Mockus
Joeseeph.Mockus@Phila.gov
1500 East Hunting Park Avenue, Philadelphia, PA 19124

4. Description of Samples:

There were 8 samples of varying targeted results used for this study. Each sample was prepared and distributed by Joe Mockus of Philadelphia Water Department, Bureau of Laboratory Services. Below is a list of the samples with the corresponding supplier:

Benzene – Millipore Sigma, CAS 12540-5ML-F
Toluene – Fisher, CAS 108-88-3
Ethylbenzene – TCI America, CAS 100-41-4
Xylenes – J.T. Baker, Lot No. B20B51
Naphthalene – TCI America, CAS RN 91-20-3

Raw source water was collected from a water treatment plant intake in amber glass bottles. Eight samples were analyzed on a weekly basis. Samples were split into three groups based on the final BTEX and naphthalene concentrations (Table 1). Samples were spiked, filtered and analyzed as described in Section 13 Procedure.