


# MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY  
Division of Water Program Coordination  
Office of Water Permit Programs

**SUBJECT:** Guidance Memo No. 99-2003  
Use of Method 1664 for Total Petroleum Hydrocarbons (TPH) Determination in  
VPDES Permits

**TO:** Regional Directors

**FROM:** Larry Lawson, P.E. 

**DATE:** February 26, 1999

**COPIES:** Regional Permit Managers, Regional Water Permit Managers, Regional  
Compliance and Enforcement Managers, Regional Technical Services  
Managers, Martin Ferguson, Richard Ayers, Bill Purcell, Andy Hagelin, Fred  
Cunningham, and Betsy Ziomek

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**SUMMARY:** The purpose of this memo is to provide guidance to VPDES permit writers to ensure that appropriate methods for determining Total Petroleum Hydrocarbons (TPH) are used.

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Method 1664: N-Hexane Extractable Material (HEM) and Silica Gel Treated N-Hexane Extractable Material (SGT-HEM) by Extraction and Gravimetry (Oil and Grease and Total Petroleum Hydrocarbons) has been developed by the United States Environmental Protection Agency Office of Science and Technology. It was developed to replace previously used gravimetric procedures that employ Freon-113 as the extraction solvent, thus reducing chlorofluorocarbons (CFCs) in the atmosphere. Memorandum dated December 23, 1996, from USEPA Region III grants interim limited use of 1664 until final promulgation of the method in the federal register.

Extractable materials that may be determined with Method 1664 are relatively non-volatile hydrocarbons, vegetable oils, animal fats, waxes, soaps, greases, and related materials. This method is appropriate for inclusion in permits for the determination of Oil and Grease.

There are several limitations to the method that make it inappropriate for use in detecting Total Petroleum Hydrocarbons (TPH). This method is not applicable to measurement of materials that volatilize at temperatures below approximately 85°C. Petroleum fuels from **gasoline through #2 fuel oil** may be partially lost in the solvent removal

operation. Some **crude oils and heavy fuel oils** contain a significant percentage of materials that are not soluble in n-hexane, thus causing recoveries of these materials to be low when Method 1664 is used for analysis. The only petroleum hydrocarbons that will be consistently detected using this method are motor oils. Therefore, methods that specifically target petroleum hydrocarbons should be employed, such as USEPA Method 418.1; either "California" or "Wisconsin" GC methods; or for solids only, SW-846 Method 8015B, a modified TPH - GRO/DRO method. Note that method 418.1 uses Freon as an extraction solvent and is scheduled to be withdrawn by EPA in the near future.

Questions or comments regarding this topic can be directed to Betsy Ziomek at (804) 698-4181 or Bill Purcell at (804) 698-4048.

### **DISCLAIMER**

**This document provides procedural guidance to the permit staff. This document is guidance only. It does not establish or affect legal rights or obligations. It does not establish a binding norm and is not finally determinative of the issues addressed. Agency decision in any particular case will be made by applying the State Water Control Law and the implementation regulations on the basis of site specific facts when permits are issued.**