



Fact Sheet

Updates to the NWTPH-Dx Analytical Method for Petroleum Hydrocarbons

The DEQ Cleanup Program and Leaking Underground Storage Tank Program use the Northwest Total Petroleum Hydrocarbon (NWTPH) analytical method for assessing the concentration of total petroleum hydrocarbons. The UST Cleanup Rules (OAR 340-122-0218(d)(A)) require the use of the Northwest Total Petroleum Hydrocarbon Analytical Methods for samples "used to demonstrate compliance with remediation levels." Washington State Department of Ecology published the NWTPH analytical method in 1997 and has updated guidance for NWTPH-Dx (WADOE, 2024) using a revised silica gel cleanup protocol (WADOE, 2023). **DEQ expects projects to use the most recent version of NWTPH methods.** A complete revised NWTPH is expected in the upcoming years.

NWTPH-Gx and NWTPH-Dx provide quantitative analysis of gasoline range organics and diesel and heavy oil range organics, respectively.

NWTPH-Gx is a qualitative and quantitative method for volatile petroleum products (generally C5-C13) such as aviation and automotive gasolines, mineral spirits, Stoddard solvent, and naphtha.

NWTPH-Dx is an extended range qualitative and quantitative method for diesel and heavy fuel petroleum hydrocarbons. This includes the diesel range organics of middle distillates /oils (C8-C21) and the heavy oil range organics of heavy fuel /oils (generally C12-C24) from products such as jet fuels, kerosene, diesel oils, hydraulic fluids, mineral oils, lubricating oils, fuel oils, heating oils #1 and #2, heavy oils such as #4-6, Bunker C, hydraulic oil, and waste oil.

NWTPH-HCID is a qualitative and semi-quantitative screen to determine the presence and type of petroleum products that may exist in water or soil.

Updated guidance for NWTPH-Dx methods

In 2024, Ecology published updated guidance for NWTPH-Dx that includes information on how laboratories should use silica gel cleanup on groundwater samples contaminated with weathered diesel range organics. Most soils contain naturally occurring organic matter, while groundwater does not. Therefore, the use of default silica gel cleanup is generally acceptable for soil analysis, but not for groundwater. NWTPH-Dx groundwater concentrations should be reported without silica gel. If desired, the analysis may be repeated with the silica gel cleanup step to determine the degree of degradation to polar organics. In addition, **the revised protocol no longer uses a sulfuric acid cleanup step** as this can remove petroleum organically bound to sulfur, particularly heavier sulfur-containing hydrocarbons found in heavy oils such as #6 fuel oil and Bunker-C.

Sampling work plans and analytical reports should clarify the NWTPH analytical method used, including revision date and cleanup protocol. DEQ recommends verifying method details with the laboratory before submitting samples for analysis.

Comparing laboratory results to DEQ RBCs

The analytical method for NWTPH-Dx includes hydrocarbons in the diesel range organic and heavy oil range organic range. The preference is that the laboratory report these combined fractions as one result. If the laboratory reports diesel and heavy oil separately, these values should be summed before comparison to the DEQ generic RBC for diesel/heating oil (as NWTPH-Dx).

Resources

- (WADOE, 2024) [Guidance for the WDOE NWTPH-Dx Method for Testing Groundwater: Silica Gel Cleanup Protocol Revision](#)
- (WADOE, 2023) [Guidance for Silica Gel Cleanup in Washington State](#)
- (WADOE, 1997) [Analytical Methods for Petroleum Hydrocarbons](#)

Program name and contacts

For additional information, please email the [Cleanup Info](#) or [LUST Info](#) or call 503-229-5696.

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