

Summary: Guidance on the Human Health Based and Ecologically Based Soil Remediation Criteria for Number 2 Fuel Oil and Diesel Fuel Oil

The New Jersey Department of Environmental Protection (Department) is establishing a human health based remediation criterion and an ecological screening value for petroleum hydrocarbons in soil.

Direct Contact Human Health Based Criterion

The Department is establishing a direct contact human health based criterion of 4,800 mg/kg, which replaces the historical 10,000 mg/kg organic compound cap value. The 4,800 mg/kg value is based on protection from noncarcinogenic health effects at a hazard index of 1 and only applies to discharges of number 2 (no. 2) fuel oil and diesel fuel oil. This value is based solely on effects via the ingestion and dermal adsorption exposure pathway. The Department determined that the inhalation exposure pathway is not of regulatory concern.

The Department also determined that the establishment of a criterion for the impact to groundwater pathway is not applicable. However, this does not preclude the relevance of any other Site Remediation Program policies, including the sheen policy (<http://www.nj.gov/dep/srp/guidance/sheen/>), as well as the requirements to conduct an appropriate ground water investigation and remove and/or treat free and/or residual product pursuant to the Technical Requirements for Site Remediation (N.J.A.C. 7:26E; <http://www.nj.gov/dep/srp/regs/techrule/>).

Soil sampling will be in conformance with the latest versions of the Technical Requirements for Site Remediation and the Department's Field Sampling Procedures Manual (<http://www.nj.gov/dep/srp/guidance/fspm/>). Acceptable analytical methods for no. 2 fuel oil and/or diesel fuel oil are SW-846 Method 8015B - Diesel Range Organics, the Department's OQA-QAM-025, and/or their latest versions or equivalents (<http://www.nj.gov/dep/srp/guidance/tph/>). For sample results above 1,000 mg/kg, the current requirement to analyze for volatile organic compounds plus 10 tentatively identified compounds (VO+10) is to be discontinued. Instead, the Department will require base neutral compounds plus 15 tentatively identified compounds (BN+15) analysis of 25 percent of the samples exceeding 1,000 mg/kg. Of particular concern to no. 2 fuel oil and diesel fuel oil are the base neutral compounds naphthalene and 2-methylnaphthalene. Table 2.1 of the Technical Requirements for Site Remediation remains in effect for all other petroleum hydrocarbon analyses.

Because the human health based criterion is derived from the ingestion/dermal exposure pathway, single point compliance will be required, pursuant to the guidance established for the ingestion/dermal exposure pathway soil remediation standards (http://www.nj.gov/dep/srp/guidance/rs/ing_derm_guidance.pdf). Any value exceeding the 4,800 mg/kg human health based criterion will require further evaluation to determine the need for additional delineation and potential remedial action.

The Department intends to replace the 4,800 mg/kg value with a site-specific approach using an Extractable Petroleum Hydrocarbon (EPH) method that is currently under development by the Department. Once the EPH Method is approved and certified by the Department, the EPH

Method results will be used to determine if a hazard index of 1 is exceeded at the site. The Department is considering applying this protocol to discharges of other petroleum hydrocarbon compounds as well as no. 2 fuel oil and diesel fuel oil. The public and regulated community will be notified via the Department's website when the EPH Method becomes available and the site-specific approach implemented.

Ecological Based Screening Value

The Department is establishing an ecological screening value of 1,700 mg/kg that is applicable to all petroleum hydrocarbon discharges if and only if a sensitive environmental receptor is potentially impacted by petroleum hydrocarbon contamination as determined by a baseline ecological evaluation (N.J.A.C. 7:26E-3.11). In these situations, an ecological risk assessment will be conducted pursuant N.J.A.C. 7:26E-4.7 in order to establish a site-specific ecological criterion. The maximum allowable site-specific ecological criterion is 4,800 mg/kg. This ecological maximum is not related to the direct contact human health criterion.

Sampling will again be in conformance with the latest versions of the Technical Requirements for Site Remediation and the Department's Field Sampling Procedures Manual. The primary compliance mechanism will be on a single point basis.

Implementation

The Department will allow a phase period of six months for the use of this guidance which is similar to the phase in period for the soil remediation standards (<http://www.nj.gov/dep/srp/guidance/rs/phasein.htm>). The options outlined below for "Before March 17, 2009" are contingent on the submission of an approvable remedial action workplan (RAWP) or remedial action report (RAR) to the Department for the remediation of No. 2 fuel oil and/or diesel fuel oil contamination.

Before March 17, 2009

Soil Cleanup Criterion value for Total Petroleum Hydrocarbons (TPHC):	May use either 10,000 mg/kg or 4,800 mg/kg
Soil analysis:	May use either Volatile Organics (VO+10) or Base Neutral Organics (BN+15) to analyze 25% of the soil samples that exceed 1,000 mg/kg TPHC
Remediation Standards or Criteria for VO or BN contaminants:	May use either Soil Cleanup Criteria (SCC) or Soil Remediation Standards (SRS)

After March 17, 2009

Remediation Criterion for PHC:	Must use 4,800 mg/kg
Soil analysis:	Must use BN+15 to analyze 25% of the soil samples that exceed 1,000 mg/kg PHC
Remediation Standards for BN contaminants:	Must use SRS

If a Remedial Action Workplan (RAWP) or Remedial Action Report (RAR) submitted within the six month phase in period is not approvable (i.e., the Department issues a Notice Of Violation [NOV] for that document), then the person responsible for conducting the remediation must use the remediation criterion of 4,800 mg/kg for PHC and the soil remediation standards for BN contaminants.

Additional Information

The Department has prepared a detailed guidance document detailing the derivation of the direct contact human health based criterion and ecological screening value. This document is available at <http://www.nj.gov/dep/srp/guidance/rs/phcguidance.pdf>.