

Guidance for the Sampling and Analysis of Concrete Designated for Recycling

I. Overview:

The New Jersey Department of Environmental Protection (Department) is requiring the characterization by sampling and analysis of concrete and concrete-processing fines at all New Jersey demolition and construction sites that have the Department's Site Remediation and Waste Management Program's (SRWMP) oversight at a contaminated site when the concrete is designated for: 1) recycling pursuant to N.J.A.C. 7:26A *et seq.*; or, 2) beneficial use pursuant to N.J.A.C. 7:26-1.7(g), rather than disposal as solid waste. This characterization requirement applies to demolished buildings, concrete roadways and related structures such as, but not limited to, sidewalks and curbing. The Department is taking this step to ensure that the concrete entering the State's concrete recycling system is clean and will not contaminate otherwise clean sites.

The Sampling and Analysis Protocol outlined below is for certain contaminants that the Department recognizes may be found in concrete from contaminated sites. Only uncontaminated concrete will qualify for recycling, while some minimally contaminated concrete or concrete fines may qualify for beneficial uses but only with Department approval. For example, asphalt-contaminated concrete or concrete mixed with soils may meet beneficial use requirements for certain conditional uses at roadways.

II. Materials Management:

After demolition of a structure or consolidation of concrete from roadway repairs, if the concrete material is designated for either recycling or beneficial use then the concrete material must be stockpiled at the site of generation and sampled according to the Sampling and Analysis Protocol below. Otherwise the concrete must be managed as solid waste per the requirements at N.J.A.C. 7:26 *et seq.* All sampling must take place at the site of generation in accordance with the Department's Technical Requirements for Site Remediation at N.J.A.C. 7:26E, including the Field Sampling Procedures Manual. The Department Case Manager may authorize in situ sampling, which is sampling prior to demolition, for initial site screening and may make site-specific modifications to these sampling and analysis requirements at the Department's discretion. No material may be moved from the site of generation until the analytical results for the material are provided to the Department for review and the Department has approved the material for recycling or beneficial use. The Department may require the disposal of some or all of the material as solid waste if it determines that the material is too contaminated for recycling or beneficial use.

III. Criteria for Materials Disposition:

The disposition of all concrete material from contaminated sites with the Department's SRWMP's oversight at contaminated sites shall be determined by characterization of the material using the results of sampling and analysis conducted according to this guidance.

The analytical results shall be compared to the Department's most recent Soil Cleanup Criteria (SCC), which are publicly available at the following website:
<http://www.state.nj.us/dep/srp/regs/scc/index.html> .

Materials containing contamination entirely below the Department's Residential Direct Contact Soil Cleanup Criteria (RDCSCC) shall be considered eligible for transfer: 1) to a Class B Recycling Center holding a General or Limited Approval for recycling, 2) for recycling per the recycling site approval exemption requirements at N.J.A.C. 7:26A-1.4(a)2, 7, or 20, or 3) for direct unrestricted use on or off site in compliance with all other requirements. Compliance with any local ordinances would still be required.

Materials containing any contaminant above the Department's RDCSCC are considered solid wastes and must be managed in accordance with the full requirements for solid waste pursuant to the Department's Solid Waste Regulations at N.J.A.C. 7:26 *et seq.* These materials do not qualify for the following: 1) recycling at the State's Class B, or other, Recycling Centers holding a General Approval or at Class B Limited Recycling Centers approved in accordance with the requirements at N.J.A.C. 7:26A-3.7; 2) recycling at sites operating per the recycling approval exemption requirements at N.J.A.C. 7:26A-1.4(a)2, 7, or 20; and, 3) for direct reuse or recycling on or off of the site of generation without Department approval. The generator of materials containing contamination above the RDCSCC may apply to the Department for a Certificate of Authority to Operate a Beneficial Use Project per the requirements at N.J.A.C. 7:26-1.7(g) in order to obtain authorization to use the materials either in or out of the State.

IV. Separation of Distinct Demolition Areas and Materials:

The sampling and analysis protocol specified in this document is based on defining distinct areas of demolition based on properties, structures and known and suspected areas of contamination within or on a structure, roadway or pad or any other "area of concern". Based on these factors, demolition shall be planned to prevent the mixing of these "distinct areas of demolition" and the consultant/responsible party is obligated to develop, implement and provide justification for how the "distinct areas of demolition" piles were generated. Demolition practices shall separate out materials such as paint, caulk, and contaminated residue or material, prior to and/or concurrent with demolition, for proper manifesting and waste disposal. This information and practices shall be used to support and justify sampling frequency and protocols.

V. Sampling and Analysis Protocol:

1. What Demolition Materials to Sample: Source Separated Concrete, Block, Brick and Concrete Fines (processed concrete fines or concrete mixed with soil, sand, stone, etc.) at all New Jersey demolition and construction sites that have the Department's Site Remediation Program's oversight at a contaminated site.

2. How to Sample:

- a. **Biased Sampling:** All sampling shall be biased toward visible staining or other indication of potential contamination: such as the source of the material, coloration or odor.
- b. **Sampling Areas:** Sampling areas shall be determined based on each distinct area of demolition such as separate properties, separate structures on the same property, known or suspected areas of contamination within a structure or roadway, or designated Areas of Concern (AOC) as previously proposed and approved and/or supplemented by the Department case manager.
- c. **Sampling Frequency:** Each Sampling Area shall be sampled at the following rate:
 (Cumulative composite sampling of 1 sample per 20 yds³)
 Less than, or first 400 yds³ - 1 Composite Sample per each first 100 yds³
 400 yds³ – 2000 yds³ - 1 Composite Sample per each next 200 yds³
 Over 2000 yds³ - 1 Composite Sample per each next 500 yds³

3. What Contaminants to Analyze: (Analysis Profile)

For All Sites:

- a. **PCBs & PAHs:** sample and analyze in all concrete and concrete fine materials.

Based on site-specific factors or as directed by the Department Case Manager:

- b. **TCLP, TAL/TCL+30, TPH:** If known or suspected at industrial, mining or other sites, or as directed by the Department's Case Manager for the site, analyze for RCRA TCLP including TCLP metals, VOCs, SVOCs, TCLP Pesticides, Herbicides; TAL/TCL+30, TPH.
- c. **Dioxins/Furans:** If known or suspected at industrial, mining or other sites, or as directed by the Department's Case Manager for the site, use USEPA Method 1613B, 1ppt detection limit, 17-congener profile, or the latest Department-approved method.
- d. **Radionuclides:** If known or suspected at industrial, mining or other sites, or as directed by the Department's Case Manager for the site, analyze by gamma spectroscopy for the natural series of radionuclides. The representative samples should be dried, sealed and counted after 21 days. The minimum detectable concentration requirement for Ra-226 and Th-232 daughter nuclides should be 0.5 picoCuries per gram (pCi/g) on dried material. Provide laboratory documentation of analysis and methodology. The laboratories must be certified by the Department's Office of Quality Assurance (OQA) for radionuclides in soil analysis (SHW09.60130). Contact Mr. Vas Komanduri of OQA at (609) 984-0855 for a current list of certified laboratories.