

# Special Waste Analysis and Implementation Plan

## Guidelines

This document is not meant to encompass all aspects of SC Regulation 61-107.19. It was prepared to assist regulated parties when considering issues related to waste characterization. Please review the entire regulation to gain a complete understanding.

### Regulatory Summary:

The **South Carolina Solid Waste Policy and Management Act of 1991 (the Act)**, S.C. Code Ann. § 44-96-390 establishes requirements for the Special Waste Analysis and Implementation Plan (SWAIP). This section addresses the procedures for acceptance of special waste as defined within the Act at a Class Three landfill. The following is taken directly from the Act:

**SECTION 44-96-390.** Approval procedures for special wastes:

(A) For the purposes of this section, “**special wastes**” are defined as nonresidential or commercial solid wastes, other than regulated hazardous wastes, that are either difficult or dangerous to handle and require unusual management at municipal solid waste landfills, including, but not limited to:

- (1) Pesticide wastes;
- (2) Liquid wastes and bulk liquid wastes;
- (3) Sludges;
- (4) Industrial process wastes, defined as wastes generated as a direct or indirect result of the manufacture of a product or the performance of a service, including, but not limited to, spent pickling liquors, cutting oils, chemical catalysts, distillation bottoms, etching acids, equipment cleanings, point sludges, core sands, metallic dust sweepings, asbestos dust, and off-specification, contaminated, or recalled wholesale or retail products. Specifically excluded are uncontaminated packaging materials, uncontaminated machinery components, landscape waste, and construction or demolition debris;
- (5) Wastes from a pollution control process;
- (6) Residue or debris from the cleanup of a spill or release of chemical substances, commercial products, or wastes listed in items (1) through (5);
- (7) Soil, water, residue, debris, or articles that are contaminated from the cleanup of a facility or site formerly used for the generation, storage, treatment, recycling, reclamation, or disposal of wastes listed in items (1) through (6); and
- (8) Containers and drums.

(B) A special waste must not be disposed of nor accepted for disposal at a municipal solid waste landfill without prior written approval by the disposal facility in accordance with department requirements.

(C) A facility may apply to the department at any time for modifications or additions to the types of special waste disposed of or methods for disposal.

(D) Not later than six months after this article is effective or the initial receipt of wastes, whichever is later, the owner or operator of a municipal solid waste landfill shall prepare and submit to the department a waste analysis plan that addresses, at a minimum, the:

- (1) Parameters for which each waste will be analyzed and the rationale for the selection of those parameters;
- (2) Test methods which will be used to test for those parameters;
- (3) Sampling methods which will be used to obtain a representative sampling of the special waste to be analyzed;
- (4) Frequency with which the initial analysis of the special waste will be reviewed or repeated to ensure that the analysis is accurate and up to date; and
- (5) Procedures which will be used to inspect and, if necessary, analyze each special waste received at the facility to ensure that it matches the identity of the special waste designated on the accompanying transportation record. At a minimum, the plan must describe the:
  - (a) Procedures which will be used to determine the identity of each special waste managed at the facility; and
  - (b) The sampling methods, which will be used to obtain a representative sample of the special waste to be identified, if the identification method includes sampling.

(E) The department shall respond to the analysis plan within ninety days of the date of its receipt by the department.

**Regulation 61-107.19 Solid Waste Management, Solid Waste Landfills and Structural Fill** (Regulation), expounds upon the requirements in the Act by better defining the requirements for waste characterization within the SWAIP. The Regulation also requires all Class Three Landfills to have a SWAIP. The following sections of the Regulation deal with special wastes, waste characterization, and SWAIP:

**Regulation 61-107.19. Part 1.B. Definitions:**

77. “Special Wastes” means nonresidential or commercial solid wastes, other than regulated hazardous wastes, that are either difficult or dangerous to handle and require unusual management at Class Three landfills, including, but not limited to, those wastes contained in S.C. Code Section 44-96-390 (A).

78. “Special Wastes Analysis and Implementation Plan” means the procedures used to identify and manage special wastes at Class Three landfills, pursuant to SC Code Section 44-96-390.

**Regulation 61-107.19. Part 1.C. Waste Characterization:**

1. Waste Characterization Report.

- a. Determination of the proper landfill class for disposal of a waste stream is based on the chemical and physical properties of the waste and not on the source of generation of the waste. To determine the class of landfill required for proper disposal of a waste stream, the permittee shall submit to the Department a waste characterization report. The waste characterization report shall consist of a comprehensive analytical evaluation of the chemical and physical nature of each waste stream. Hazardous wastes as defined in R.61-79, Hazardous Waste Management Regulations shall not be disposed of in the landfills under the purview of this regulation. The wastes acceptable for disposal in a Class One landfill, and waste items listed in Appendix I are exempt from the waste characterization process outlined in this regulation. **Class Three landfills shall adhere to their approved Special Waste Analysis and Implementation Plan (SWAIP), pursuant to S.C. Code Section 44-96-390 which shall be deemed to be in compliance with this Section.**
- b. The toxicity characteristic leaching procedure (TCLP) (USEPA method 1311) shall be used to obtain all extracts for the purpose of characterizing a waste stream proposed for disposal in a solid waste landfill.
- c. The analytical results of the TCLP shall be compared to the MCLs in South Carolina R.61-58 State Primary Drinking Water Regulation to determine the appropriate class landfill in which the waste stream may be disposed. If no MCL exists for a parameter, then those drinking water risk-based concentrations recognized by EPA Region IV shall be used to determine the appropriate class landfill for the waste. For those parameters where no MCL or Region IV number exists, the Department, using input from the permittee, will develop an appropriate number for determining the landfill class for disposal of that waste stream.
- d. Unless otherwise exempted in this regulation, all wastes shall be characterized in accordance with the following schedule:
  - (1) A minimum of every three years using certified knowledge of the process by which the waste stream was generated;
  - (2) At a minimum of every six years using analytical test data from the TCLP;

- (3) According to a Department approved alternate schedule based on the variability or non-variability noted in previous sampling events or other factors that affect the predictability of waste characteristics;
  - (4) When the process or raw materials used in the process that generates the waste changes significantly enough to alter the chemical makeup or chemical ratios of the waste stream; and,
  - (5) When a new waste stream is proposed for disposal.
- e. Waste streams not listed in Appendix I, that demonstrate properties similar to the waste listed on Appendix I, may be exempted from testing as determined by the Department on a case-by-case basis. Requests for an exemption from testing, along with technical rationale for the exemption, shall be submitted to the Department in writing.
  - f. The Department will provide current forms and guidance documents needed for the successful completion of the waste characterization process. All analytical results from the characterization process shall be submitted to the Department on these forms or in a format approved by the Department.

## 2. Waste Testing and Waste Stream Determination.

- a. The permittee shall submit to the Department a comprehensive determination of the chemical and physical nature of each waste stream to be landfilled in accordance with the following sampling and analytical requirements:
  - (1) To ensure that representative samples are obtained, the sampler shall develop a sampling plan and employ all reasonable measures, such as sampling different sources of solid waste at different times, or conducting random sampling of a representative pile of the waste generated from different sources at different times. All samples of waste shall be collected using procedures as described in EPA Publication SW-846.
  - (2) All analytical testing required by this regulation shall be performed by a laboratory certified by the Department for the appropriate methodologies, to both properly prepare and analyze for the required parameters. The current guidelines for applicable regulatory thresholds, practical quantification limits, and required quality assurance data shall be obtained from the Department prior to the start of the characterization project. Analytical results shall be submitted to the Department within 60 days of the sample collection date.
  - (3) Mixing of individual wastes to be disposed of prior to testing is acceptable only if:

- (a) The individual wastes are mixed prior to discharge in the normal production process of the generator or the individual wastes are generated by identical processes and identical raw materials; or,
- (b) The mixing of individual non-hazardous wastes results in a waste in which leaching characteristics are no greater than the leaching characteristics of one or more of the individual wastes; and,
  - i. A demonstration is submitted to the Department for review and approval that details how a reduction in leaching occurs due to some factor other than dilution. The demonstration shall include, at a minimum:
    - aa. The concentration, determined in accordance with the requirements of this Section, for each parameter that undergoes a reduction in concentration. Concentrations of parameters shall be determined for each individual waste in the mixture and for each parameter as a result of the mixture;
    - bb. A listing and the ratio, by weight and volume, of the individual wastes that comprise the mixture;
    - cc. Calculations using the concentration and weight data required in paragraphs aa. and bb. above, which demonstrate quantitatively that the reduction in leaching characteristics is not solely due to dilution; and,
    - dd. Identification and explanation of the chemical reactions, including chemical equations, which cause the reduction.
  - ii. The individual non-hazardous wastes are mixed in the same ratios and in the same manner in which they will be mixed prior to disposal.
- (4) For the purpose of obtaining an extract, which will be analyzed for any volatile organic compounds, a zero headspace extraction apparatus, as specified in the TCLP, shall be used.
- (5) Practical Quantitation Limits (PQLs) for the analytical methods shall be one order of magnitude below the required regulatory threshold for the particular landfill class desired for disposal. Slight deviations in minimum PQL may be granted, on a case-by-case basis, with proper application and technical justification to the Department.
- b. For the initial characterization of solid waste to be disposed of in a solid waste landfill, a minimum of two (2) representative samples of the waste shall be collected and tested in accordance with the TCLP. TCLP testing of additional

samples of the solid waste may be required by the Department, based on a high degree of variability in the concentration of a parameter at or near the maximum allowable concentration for a particular landfill class. The Department may allow, with prior approval, the testing for selected constituents based on the generators knowledge of the process.

- c. The permittee shall notify and obtain approval from the Department prior to making any physical or chemical changes to the waste stream being disposed of in a solid waste landfill.
  - (1) Significant changes in the chemical or physical nature of the waste stream may require disposal of the waste stream in a different class of landfill.
  - (2) Significant changes to the chemical or physical nature of the waste stream may require modification of the environmental monitoring program.
- d. Any person seeking to utilize a testing or analytical method other than the TCLP method described in Section C.1.b. above may request authorization to do so. To be successful, the applicant shall demonstrate to the satisfaction of the Department that the proposed method is equal to or superior to the TCLP in terms of its sensitivity, accuracy, and precision (i.e., reproducibility). The request shall include, at a minimum:
  - (1) A full description of the proposed method, including all procedural steps and equipment used in the method;
  - (2) Description of the types of wastes or waste matrices for which the proposed method may be used;
  - (3) Comparative results obtained from using the proposed method with those obtained from using the TCLP;
  - (4) An assessment of any factors, which may interfere with, or limit the use of, the proposed method;
  - (5) A description of the quality control procedures necessary to ensure the sensitivity, accuracy, and precision of the proposed method; and,
  - (6) Any other information on the proposed method, which the Department may reasonably request to evaluate the proposed method.
- e. The outcome of an alternate testing procedure as outlined in Section C.2.d. above may result in revision of the landfill class limits as defined in Part I, Section A.1. of this regulation to ensure equivalent protection of human health and the environment.

- f. Solid waste streams that contain chemicals or chemical properties potentially harmful to human health and the environment, for which TCLP or other approved testing procedures as outlined in Section C.2.d. above is not sufficient, shall be classified on a case-by-case basis by the Department. The permit applicant may be required to perform alternate testing procedures as necessary to determine the potential adverse effects to human health and the environment.
  - g. A sampling and analysis plan for performing the activities outlined in Section C.2.a.-f. above shall be submitted to the Department for review and approval prior to sampling for waste characterization purposes.
  - h. If the waste characterization test results indicate that a landfill reclassification is necessary based on exceedance of the landfill classification level outlined in Part IV A.1., the Department may require additional sampling and testing to confirm or reject such indication. If exceedance of the landfill classification level outlined in Part IV A.1 is confirmed and the facility intends to continue to accept the waste stream in question, the Department will require the permittee to submit a permit application for appropriate modifications to the landfill. The required modifications shall insure that the facility meets the requirements of the new landfill classification.
3. Waste Characterization Report for Class Two Landfills.
- a. Class Two landfills shall, prior to permit issuance, submit a waste characterization report that contains at a minimum, the following:
    - (1) A listing of each solid waste proposed for disposal in the facility;
    - (2) The solid waste sampling plan used to ensure that accurate and representative samples are collected in accordance with Section C.2.a. above;
    - (3) A detailed description of any mixing to be proposed as described in Section C.2.a. above, and any available information that is required by that section;
    - (4) All laboratory results and quality assurance/quality control documentation that fully characterizes each waste; and,
    - (5) The name, location, and contact person of each generator of solid waste to be disposed of at the facility.
  - b. Class Two landfills that accept ONLY those wastes specifically listed in Appendix I are exempt from the waste characterization report requirements.
  - c. Class Three landfills shall adhere to their approved Special Waste Analysis and Implementation Plan (SWAIP), pursuant to S.C. Code Section 44-96-390.

4. Compliance with the Department approved SWAIP will satisfy requirements of this section for Class Three landfills.

**Regulation 61-107.19. Subpart C. Operating Criteria:**

258.20. Procedures for Excluding the Receipt of Hazardous Waste and Special Waste:

- a. Owners/operators of all Class Three landfills shall implement a program at the facility for detecting and preventing the disposal of regulated hazardous wastes as defined in the South Carolina Hazardous Waste Management Regulations R.61-79.261 and polychlorinated biphenyls (PCB) wastes as defined in Toxic Substances Control Act (TSCA), Part 761. This program shall be a part of the Special Waste Analysis and Implementation Plan (SWAIP) and shall include, at a minimum:
  - (1) **Random daily inspections of no less than 10% of incoming loads** unless the permittee takes other steps as outlined in the SWAIP to ensure that incoming loads do not contain regulated hazardous wastes, PCB wastes, or wastes not specifically allowed by the permit. Bulk PCB wastes may be allowed for disposal in a Class Three landfill based on a case-by-case determination by the Department. *(Note: All PCBs must be sourced according to the TSCA Mega Rule. PCB's from sources greater than 50.0 ppm must be disposed of under the TSCA program rules regardless of corrective action);*
  - (2) Records of unacceptable waste to include quantities and descriptions of waste, generator information, and how/where waste was properly disposed;
  - (3) Training of facility personnel to recognize regulated hazardous waste and PCB wastes; and,
  - (4) Notification of the Department within 72 hours of facility personnel becoming aware that a regulated hazardous waste or PCB waste may have been disposed of at the facility.
- b. Definitions. See Part I., Section B. for definitions that apply to this regulation.
- c. The owners/operators of all Class Three landfills shall implement a program at the facility for regulating the receipt of special wastes as described in SC Code Section 44-96-390.

## **Guidance for Class Three Landfills in Developing a SWAIP:**

Based upon the Act and the Regulation, all Class Three Landfills shall have a Department approved SWAIP. This plan shall meet all requirements under the waste characterization section of the Regulation and shall establish procedures for excluding the receipt of hazardous waste and special waste as outlined in Subpart C, Section 258.20.

So what should be in the SWAIP? The Department recommends that the SWAIP contain the following items, at a minimum:

1. Waste Characterization Plan
  - a. Parameters that will be analyzed along with rationale for selection
  - b. Test methods that will be used to analyze parameters (Based upon US EPA Publication SW-846)
  - c. Sampling methods that will be used to obtain a representative sample of the waste stream
  - d. Frequency with which the initial analysis of the waste stream will be reviewed and/or repeated to ensure consistency of the waste
  - e. Procedures that will be used to inspect each special waste to ensure it matches the transportation manifest and approved waste profile to include:
    - i. Procedures to determine the identity of each special waste received at the facility, and
    - ii. Sampling methods and test methods that will be used, if needed
2. Waste Characterization Report
  - a. List of non-residential, commercial, and/or industrial special wastes that the landfill will not take
  - b. List of approved special wastes
  - c. Analytical results for each approved special waste (these shall be retained at the landfill for a period of six years)
3. Waste Screening and Inspection Program
  - a. Describe procedures for screening of wastes streams at the scale house
    - i. Residential MSW waste streams
    - ii. Non-residential, commercial, and/or industrial special waste streams using manifests, waste profiles, and waste characterization
    - iii. Documentation of rejected loads
  - b. Describe procedures for random daily inspections of 10% of loads received

- i. Location of inspections within the lined area of the landfill (e.g., a separate section near the working face)
  - ii. Methods use to identify unacceptable waste
  - iii. Documentation of daily inspections by load, date, time and type of waste stream
  - iv. Records of unacceptable waste to include quantities and descriptions of waste, generator information, and how/where waste was properly disposed
- c. Describe the training program that will be used to teach facility personnel to recognize regulated hazardous waste and PCB wastes; and,
- d. Describe procedures that will be followed to notify the Department within 72 hours of facility personnel becoming aware that a regulated hazardous waste or PCB waste may have been disposed of at the facility.