

North Carolina Hazardous Waste Section
“Contained-in” Policy for Soil Contaminated with Listed Hazardous Waste

Revised February 2015

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North Carolina Hazardous Waste Section

“Contained-in” Policy for Soil Contaminated with Listed Hazardous Waste

1.0 PURPOSE AND SCOPE

This policy provides guidelines for managing excavated soil contaminated with listed hazardous wastes, as defined in 40 CFR 261 Subpart D and adopted by reference in 15A NCAC 13A .0106_ (<http://portal.ncdenr.org/web/wm/hw/rules/statelaws>). It also identifies the criteria used to determine the appropriate management option, including when it may no longer be managed as hazardous waste. The disposal/management options described in this policy are:

- 1) Disposal or treatment of soil as a hazardous waste in a RCRA Subtitle C TSD (landfill or treatment) facility;
- 2) Disposal of soil as a non-hazardous waste in a Subtitle D lined Municipal Solid Waste Landfill; or
- 3) Unrestricted use of soil.

This policy is only for use with North Carolina remedial action projects and does not apply to soil generated out of state and transported to North Carolina for disposal. The levels used for determining when soil may be managed as non-hazardous waste should not be confused with clean-up levels. Clean-up levels should be obtained from the agency providing remediation oversight. For the Hazardous Waste Section, a document entitled “*Guidelines for Establishing Remediation Goals at RCRA Hazardous Waste Sites*” is available at http://portal.ncdenr.org/c/document_library/get_file?uuid=d4876a61-e6af-404a-8408-407536e3d3d1&groupId=38361

2.0 APPLICABILITY

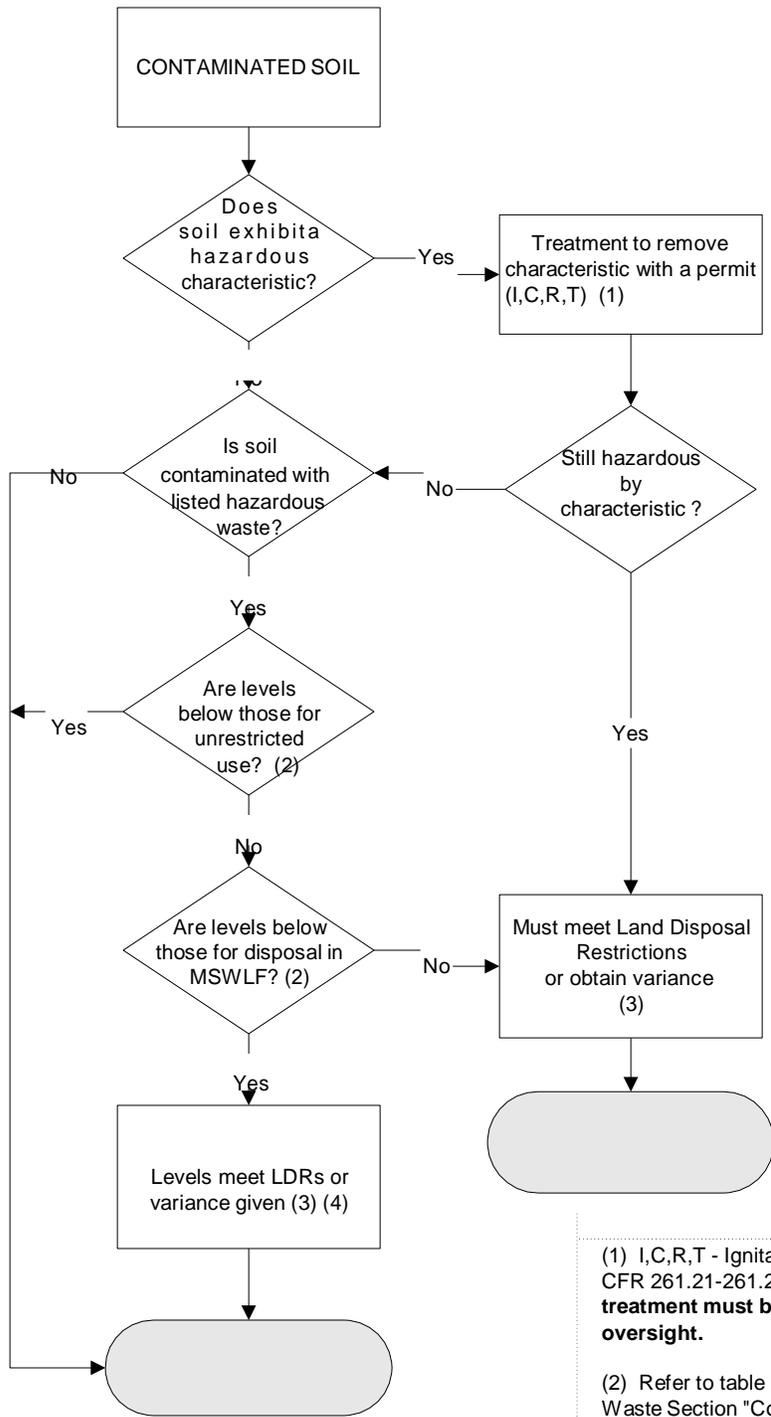
This policy applies to soil that has been contaminated with listed hazardous waste and therefore contains hazardous constituents. When soil has been contaminated from the release of a listed hazardous waste that listed hazardous waste is considered to be “contained-in” the soil. While the soil itself is not considered a listed hazardous waste, when “generated” (i.e. removed from place, excavated), it must be managed as such. For soil to be eligible for management under this policy, that soil must not exhibit a hazardous characteristic¹.

This policy *applies only to soil* and supersedes that portion of the January 21, 1992 HWS policy on contaminated environmental media. No other environmental media, process waste streams, debris or other materials are covered by this policy. The HWS will make case-by-case waste determinations for any other type of environmental media, and for contaminated soil generated from out-of-state.

¹ For the purpose of compliance with this condition, the generator must determine whether the waste is characteristic using the following test methodologies or equivalent method approved by the HWS, or by applying knowledge of the hazardous characteristic in light of the materials or the processes used (40 CFR 262.11(c), as adopted in 15A NCAC 13A .0107).

- Corrosivity SW-846 Method 9045C, Soil and Waste pH
- Reactivity SW-846 Chapter 8.3
- Ignitability SW-846 Method 1030, Ignitability of Solids
- Toxicity SW-846 Method 1311 and comparison to values listed in Table 1 after 40 CFR 261.24

FIGURE 1
North Carolina Hazardous Waste Section
"Contained-In" Policy Decision-Making Flowchart



FOOTNOTES

(1) I,C,R,T - Ignitability, corrosivity, reactivity and toxicity defined in 40 CFR 261.21-261.24 as referenced in 15A NCAC 13A .0106. **Any on-site treatment must be pre-approved by the agency with regulatory oversight.**

(2) Refer to table in Attachment 1 of this document ("NC Hazardous Waste Section "Contained-In" Policy for Soil Contaminated with Listed Hazardous Waste.")

(3) Treatment Standards for disposal in either a Subtitle C or D landfill must be met (10x Universal Treatment Standard or 90% reduction in concentration) per 40 CFR 268.49 as adopted in 15A NCAC 13A .0112. The variance procedure is described in 40 CFR 268.44.

(4) The HWS used 40 CFR 268.44(2)(ii) as the basis for establishing some "contained-out" levels.

(5) In Subtitle D lined Municipal Solid Waste Landfill (MSWLF) -- contact landfill for acceptance criteria. If levels for unrestricted use are met, soil may be left on site.

3.0 **POLICY**

This policy is designed to be self-implementing by the party (ies) responsible for the soil contamination and their agent(s). No regulatory agency approval is required prior to disposal of the soil if all criteria of this policy have been met. Documentation of adherence to this policy must be provided through a certification process discussed below. Documentation should be submitted to the HWS project manager overseeing the site or to one of the HWS contacts listed on page 12 of this document. A tabulation of all data used to determine the management options chosen is required in the certification. Refer to Figure 1 (page 2) for a decision flowchart to determine the proper management option for soil contaminated with listed hazardous waste.

The criteria for the three management options for soil contaminated with listed hazardous waste follow. Additional details are given later in this document.

1. Soil **must be** managed as a hazardous waste when it contains hazardous constituents above the levels established for disposal in a MSWLF in Attachment 1 of this policy. Soil must also be managed as a hazardous waste if it exhibits a hazardous characteristic.
2. Soil may be disposed in a MSWLF when hazardous constituent concentrations are equal to or less than the total values established for disposal in a MSWLF in Attachment 1 of this policy. In addition to total values, some constituents in Attachment 1 also have levels for MSWLF disposal based on leachate analyses. If the total value is exceeded and the constituent has a leachate value given, a facility may choose to use SW-846 Method 1311 (Toxicity Characteristic Leaching Procedure) analysis on the same sample to determine if a soil can pass the “contained-out” leachate criteria for Subtitle D MSWLF disposal. Applicable holding times for the samples must still be met if the additional TCLP procedure is used.

TCLP analysis may only be used for those constituents in Attachment 1 that have a leachate level listed. The leachate column will be marked “NA” if the “contained-out” level is based on criteria with total values such as a risk-based concentration or Universal Treatment Standards for environmental media. Leachate analytical results may be used to make a “contained-out” decision if:

- a) The initial total analysis shows that all constituents without leachate levels in Attachment 1 are less than or equal to the total values for MSWLF disposal;
- and**
- b) The leachate analysis shows that constituents with leachate values in Attachment 1 are less than the leachate value.

Other applicable restrictions must also be met.

- The soil must not exhibit a hazardous characteristic;
- The facility may need to obtain approval from the Subtitle D MSWLF;
- The soil must not be contaminated with petroleum products above *de minimis* levels;
- If leachate analyses are used for the 40 TCLP constituents, values must be less than the value in Attachment 1 or the soil will be considered hazardous by the toxicity characteristic.

3. Soil use is unrestricted when it contains hazardous constituents equal to or less than the established “Levels for Unrestricted Use” in Attachment 1 of this policy. For unrestricted use, all levels are based on the total analyses of constituents present.

Other applicable restrictions must also be met:

- The soil must not exhibit a hazardous characteristic;
- The soil should not be placed on clean or less contaminated soil;
- Soil containing 20 or more hazardous constituents is not covered by this policy. Pre-approval by the HWS on a case-by-case basis is necessary to determine whether this soil is suitable for unrestricted use.
- Soil containing listed hazardous waste that meets the unrestricted use levels but contain petroleum product contamination will be regulated under the North Carolina- DENR- Underground Storage Tank Section .
http://portal.ncdenr.org/c/document_library/get_file?p_l_id=38491&folderId=460783&name=DLFE-13456.pdf
- Soil that contains constituents that have unrestricted use levels below the laboratory’s method detection limits is not eligible for unrestricted use.

If soil exhibits hazardous characteristics (ignitability, reactivity, corrosivity or toxicity), then the soil may be treated to remove those characteristics before it can be eligible for disposal as non-hazardous waste. Any treatment of soil must be approved prior to implementation by the regulatory agency overseeing the remediation.

4.0 OTHER POSSIBLE RESTRICTIONS

In addition to meeting the levels for disposal in a landfill, North Carolina’s Solid Waste program has other restrictions for their Subtitle D MSWLFs. For example, petroleum-contaminated soil may be limited to use as daily cover at a landfill, subject to their restrictions and with the local MSWLF permission only. No free liquids, as defined in the EPA paint filter test (SW-946 Method 9095), are allowed in landfills. Water generated during remedial activities cannot be disposed of in a MSWLF. Polychlorinated biphenyl (PCB)-contaminated soil, regulated under the Toxic Substances Control Act, with concentrations of 50 mg/kg or greater are also excluded from disposal in landfills.

Additionally, for unrestricted use of soil that contains multiple chemicals, the total cancer risk from exposure should fall in the risk range of 10^{-4} to 10^{-6} and the total hazard quotient should not exceed one (1). If a contaminated soil has twenty (20) or more hazardous chemical constituents detected near the unrestricted use levels for carcinogens or non-carcinogens, it may not be suitable for unrestricted use. A case-by-case determination by the HWS is necessary for soil contaminated with 20 or more constituents, even if the unrestricted use “contained-out” levels are met.

The management of soil that qualifies for either unrestricted use or disposal in a Subtitle D lined MSWLF may still be subject to the requirements of other local, state or federal regulations. This includes, but is not restricted to, those of the NC Solid Waste Section, EPA’s Toxic Substance

Control Act, and the NC UST Section and the NC Division of Water Resources. In addition, this soil may still be subject to management as hazardous waste in other states.

Failure to comply with the requirements in this policy shall result in contaminated soil being subject to all the requirements of 15A NCAC 13A, including applicable penalties for the mismanagement of (soil containing) hazardous wastes.

5.0 SOIL CHARACTERIZATION

Multiple disposal/treatment options for soil should be investigated prior to excavation. The possible disposal/treatment options are 1) a RCRA Subtitle C hazardous waste landfill or treatment facility; 2) a Solid Waste Subtitle D lined MSWLF, or 3) on-site/unrestricted use.

Excavated soil must be placed in lined, covered roll-off boxes or sealed drums prior to sampling.

NOTE: Only facilities with a RCRA permit or order may, upon approval, be allowed to temporarily use staging piles following the performance criteria outlined in 264.554. The Corrective Action Management Units rules under 264.552 as adopted in 15A NCAC 13A .0109 allow permitted CAMUs to be used for treating contaminated media and wastes, but staging piles may only be used for storage or physical operations (e.g. mixing, sizing, and blending). CAMUs and staging piles must be pre-approved in a RCRA permit or alternate mechanism before use. Staging piles may be added by an agency-initiated permit/alternate mechanism modification, or by the facility requesting a Class 2 RCRA permit modification. CAMUs require a Class 3 RCRA permit modification.

Upon excavation, representative soil sample(s) shall be collected and analyzed and a waste determination made for each sampled entity (drum, roll-off box, or portion of a stockpile), for disposal/treatment options. Refer to Attachment 3 for additional sampling and analysis guidance. Containers or portions of staging piles with levels above those for disposal in a Subtitle D lined MSWLF, as outlined in Attachment 1, must be managed and disposed of as hazardous waste. Under certain conditions soil may be treated on-site using a pre-approved treatment method to meet these levels within the 90-day generator accumulation period. Creation of a staging pile or CAMU will require approval by the HWS. This approval may allow the facility to operate in a timeframe longer than the 90-day generator accumulation period.

A. Analyses

In order for contaminated soil to qualify as non-hazardous waste under this policy, analyses for the total concentration of constituents is required. The results of these analyses are then compared with the total value columns in Attachment 1. If the soil still does not qualify for disposal in a Subtitle D lined MSWLF, the facility may elect to further test the soil using a leachate analyses procedure (SW-846 Method 1311) for constituents with a leachate value given in Attachment 1. The results for the leachate analyses are compared with the leachate value column of Attachment 1.

NOTE: Not all of the constituents in Attachment 1 have leachate values. Where leachate values are not available, total values must be used to make the determination if the soil may be handled as non-hazardous waste. The facility should determine whether leachate levels are available and applicable prior to performing the analysis.

Since totals and leachate analytical results may be used to make a “contained-out” decision, a tabulation of all data (totals and leachate, if used) must be submitted with the certification found in Attachment 2.

The laboratory must analyze soil for **all** analytes reasonably expected to be in the soil or detected during assessment of contamination. Samples should be taken from the **excavated** soil (when the potential hazardous waste is “generated”) to determine the appropriate disposal option. However, if sufficient data or information is available, generator knowledge may be used to make a contained-in determination, with permission from the HWS. The laboratory’s established method detection limits (not regulatory levels such as TCLP) should be used to determine if an analyte is present. The laboratory data sheets (including lab narrative and results of QC samples such as blanks, laboratory control samples, surrogate standard recoveries, and matrix spike/spike duplicate results) should be included with the documentation for adherence to this policy.

Generally, a facility will have identified the constituents present in the soil from total analyses performed during assessment of contamination. The facility should compare the method detection limits for these constituents to the levels for unrestricted use in Attachment 1. Soil levels in Attachment 1 that are below the MDL for a constituent detected during assessment **are not eligible for unrestricted use**. Disposal of this soil may be allowed in a Subtitle D lined MSWLF provided that the following conditions are met:

1. The concentration of the constituent is below the level for disposal in a Subtitle D lined MSWLF listed in Attachment 1,
- or**
2. If the level for Subtitle D lined MSWLF disposal is below MDLs, the soil can still be sent to the landfill if it is verified that no estimated or “J” values were detected and the laboratory used the lowest possible MDLs.

B. Reporting

If the soil meets the levels in Attachment 1 for either unrestricted use or disposal in a Subtitle D MSWLF, a certification must be submitted to the HWS. The certification form to be used is included as Attachment 2 of this document. The facility must certify that soil sent to a Subtitle D landfill is kept in the original, covered containers during transport from the facility until disposal in the lined MSWLF. In other words, the soil cannot be mixed with solid waste at a transfer station or otherwise disturbed in any manner in route to the landfill.

The Hazardous Waste Section must review any other scenario that is not explicitly covered by this policy on a case-by-case basis before excavation of soil.

6.0 BACKGROUND INFORMATION

This section describes how the HWS established the levels for unrestricted use and for the disposal of soil in a Subtitle D lined MSWLF. Soil not meeting all criteria must be managed and disposed of as hazardous waste.

A. Levels listed in Attachment 1 for unrestricted use of soil were established as the lower of the two following levels:

- 1) A level protective of the underlying groundwater. North Carolina Protection of Groundwater PSRG (Preliminary Soil Remediation Goal) were used when available. When NC Protection of Groundwater PSRGs were not available, an alternate level of 10 times the 2L standard was used to estimate a level protective of groundwater¹.

or

- 2) Preliminary health-based soil remediation goals (PSRGs) (adapted from the most recent USEPA Regional Screening Tables (RSL.) http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm using ingestion, inhalation and dermal routes of exposure to contaminated soil.

B. Levels listed in Attachment 1 for disposal of soil in a Subtitle D lined MSWLF were established as follows:

- 1) For the TCLP constituents listed in Table 1, 40 CFR 261.24, the concentration level in the soil must be less than the listed regulatory hazardous waste level. The first tier of analyses are for totals with additional leachate analyses at the facility's option.

or

- 2) For constituents not on the TCLP list, the levels were established as the lower of:
 - a) Most recently updated USEPA Regional Screening Tables (RSL.) (risk-based concentrations). These levels are based on total analysis values.

or

 - b) A leachate concentration equivalent to a TCLP level (soil leachate value < 100 times the 2L standards¹). Total values are required; leachate values may be used at the facility's option².

or

 - c) Land Ban Phase IV levels for contaminated media (90% reduction or 10 times the Universal Treatment Standard). Most UTSs are based on total analysis values, although a few are leachate based.

¹ The following hierarchy of risk-based levels for the protection of groundwater was used when a 2L standard was not available:

- North Carolina's Interim Maximum Allowable Concentration
- US EPA Regional Screening Level for Tapwater. Alternatively, the US EPA Regional Screening Level for soil was used if available.

² TCLP analysis covers only 40 constituents out of over 200 listed in 40 CFR 264 Appendix IX. The leachate must be tested for all constituents detected during assessment. A dilution factor of twenty is used as a conversion from leachate to total values.

7.0 **GLOSSARY**

2L Standards

Classifications and Water Quality Standards Applicable to the Groundwaters of North Carolina (15A NCAC 2L .0202). These standards are protective of groundwater that is being used or can potentially be used as a drinking water source. NC groundwater standards (2Ls) and interim standards (IMACs) may be found on the Internet at <http://portal.ncdenr.org/web/wq/ps/csu/gwstandards>.

Background levels

The concentrations of naturally occurring constituents found in soil surrounding a waste site, taken from a geologically similar area and having similar biological, physical and chemical characteristics as the contaminated site. Samples for determining background levels should not be collected in areas affected by site activities or releases.

Characteristic Waste

A solid waste that exhibits any of the four hazardous characteristics—ignitability, corrosivity, reactivity or toxicity as defined in 40 CFR 261 Subpart C as adopted in 15A NCAC 13A .0106

“Contained-in”

When environmental media contain listed hazardous waste, the media itself is not hazardous, but must be managed as hazardous waste. Since only soil is covered in this policy, the soil “contains” listed waste and is managed “in” RCRA.

“Contained-out”

The concentrations at which a soil is determined to no longer contain listed hazardous waste. This policy describes two benchmark levels depending on which disposal scenario for the soil is used: 1) unrestricted use, or 2) disposal in a lined Subtitle D MSWLF. When the soil meets one of these benchmarks, it is no longer considered to contain hazardous waste. The soil may still “contain” hazardous constituents, but at levels that are protective of human health and the environment when managed according the guidelines in this policy. This soil is managed “out” of the jurisdiction RCRA Subtitle C regulations.

Corrective Action Management Unit (CAMU)

An area within a facility that is used only for managing remediation wastes for implementing corrective action or cleanup at the facility as described in 40 CFR 264.552 and adopted in 15A NCAC 13A .0109.

Environmental media

Refers to soil, sediment, groundwater and surface water. Soil is the only type of environmental media covered by this policy. Debris, process wastes or sludges are not environmental media and are *not* covered under this policy.

Interim Maximum Allowable Concentration (IMAC)

An interim maximum allowable concentration is established for a substance for which there is *not* an existing 2L standard. An IMAC is enforceable under the 2L rules.

“J” Value

A laboratory qualifier indicating the detection of an analyte above the method detection limit but below the practical quantitation limit. There is a 99% certainty the analyte is present, but it cannot be quantified with acceptable reliability.

Land Disposal Restrictions (LDR or Land Ban)

The regulations under 40 CFR 268, as adopted in 15A NCAC 13A .0112 that prohibit placing hazardous waste or materials containing hazardous waste directly on the land except in a staging pile or a CAMU. Containment, liners, run-on/run-off control, covers, etc. may still be required.

Listed Waste

A solid waste that has been named as a hazardous waste and appears on one of four lists in 40 CFR 261 Subpart D, as adopted in 15A NCAC 13A .0112.

Maximum Contaminant Level (MCL)

The maximum permissible level of a contaminant in water which is delivered to any user of a public water supply. The MCL is set as close to the MCLG as feasible, which the Safe Drinking Water Act defines as the level that may be achieved with the use of the best available technology, treatment techniques, and other means which EPA finds are available. This includes an examination for efficiency under field conditions and not solely under laboratory conditions, and takes cost into consideration. MCLs were not used in this policy.

Maximum Contaminant Level Goal (MCLG)

Non-enforceable concentrations of a drinking water contaminant that is protective of adverse human health effects and allow an adequate margin of safety. Since MCLGs consider only public health and not the limits of detection and treatment technology, they are sometimes set at a level that water treatment systems cannot meet.

Method detection limit (MDL)

The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero. It is determined from analysis of a sample in a given matrix type containing the analyte (per 40 CFR 136 Appendix B, as adopted in 15A NCAC 13B .1600).

North Carolina Soil Screening Levels (NC SSLs)

Soil screening levels are concentration levels protective of groundwater for chemicals that have a potential to leach. The Hazardous Waste Section soil screening levels were calculated using the equations and default parameters found in Figure 1 of the North Carolina *Guidelines for Determining Soil and Groundwater Clean-Up Levels at RCRA Hazardous Waste Sites*. Soil screening levels are back calculated from an acceptable groundwater concentration (NC 2L Standards) and take into consideration fate-and-transport parameters.

Practical Quantitation Limit (PQL)

The quantitation limit is the lowest concentration of a given analyte in soil, water, or other matrix, at which measurements can be reliably achieved within specified limits of precision and accuracy by a given analytical method during routine laboratory analysis. To determine a PQL, a method detection limit must be determined per 40 CFR 136 Appendix B, as adopted in 15A NCAC 13B .1600 or the SW-846 methodology. The MDL and multiplier (usually 2 to 5 times the MDL) are then used to establish the PQL.

Preliminary Remediation Goal (PRG)

Remediation goals that have been established using current U.S. EPA risk assessment guidance that are based on a lifetime excess cancer risk of 1×10^{-6} (carcinogens) and a hazard quotient of 0.2 (non-carcinogens). The hazard quotient of 0.2 is used to account for multiple (average of five) non-carcinogens in the same critical effect group. The branch will adjust these remediation goals at sites with less than five non-carcinogens in the same critical effect group. See Risk-based concentrations below.

Recommended Standard

Proposed changes to 2L and IMAC standards based upon review of current toxicological and epidemiological data. If a change is recommended, the “recommended” standards become enforceable only after going through the rulemaking process. Until that process is complete, the original 2L or IMAC is the enforceable standard.

Remediation waste

All solid and hazardous wastes, and all media (including groundwater, surface water, soil and sediment) and debris that contain listed hazardous wastes or that exhibit a hazardous characteristic and are managed during cleanup.

Risk-Based Concentrations (RBCs)

Hazardous constituent levels in the soil that correspond to a hazard quotient for non-carcinogenic compounds of one (1) and a risk of 10^{-6} (or one-in-a-million) for carcinogenic compounds.

Soil

Unconsolidated earth material composing the superficial geologic strata (material overlying bedrock), consisting of clay, silt, sand or gravel size particles as classified by the U.S. Natural Resources Conservation Service. Or, a mixture of such materials with liquids, sludges or solids which is inseparable by simple mechanical removal process and is made up primarily of soil by volume based on visual inspection. ***Any deliberate mixing of prohibited hazardous waste with soil that changes its treatment classification (i.e., from waste to contaminated soil) is not allowed*** under the dilution prohibition in 40 CFR 268.3, as adopted in 15A NCAC 13A .0112.

Soil hazardous by characteristic

Soil that is ignitable (waste code D001 as described in 40 CFR 261.21), corrosive (waste code D002 as described in 40 CFR 261.22), reactive (waste code D003 as described in 40 CFR 261.23) or toxic by characteristic (waste codes D004-D043 as described in 40 CFR 261.24), as adopted in 15A NCAC 13A .0106) are considered hazardous by characteristic.

Soil containing listed hazardous waste

Any concentration of hazardous constituents in soil, attributable to contamination from listed hazardous waste that is above the benchmarks described in this policy. The two benchmarks for soil are risk-based levels: 1) for unrestricted use, or 2) for disposal in a Subtitle D lined MSWLF. Soil meeting either of these benchmarks is not considered to contain hazardous waste. However, soil meeting the levels for disposal in a Subtitle D line MSWLF must only be disposed in such a landfill.

Staging pile

An accumulation of solid, non-flowing remediation waste (as defined in 40 CFR 260.10) that is not in a containment building and that is used only during remedial operations for temporary storage at a facility. Staging piles must be designated by the HWS according to the requirements of 40 CFR 264.554, as adopted in 15A NCAC 13A .0109.

Subtitle D Municipal Solid Waste Landfill (MSWLF)

A discrete area of land or an excavation that receives household waste, and is not a land application unit, surface impoundment, injection well or waste pile. Such a landfill may be publicly or privately owned. A MSWLF may also be permitted to receive other types of non-hazardous solid waste. It is constructed with a base liner and leachate collection system designed in accordance with Subtitle D Part 258 regulations (15A NCAC 13B .1600).

Toxicity Characteristic Leaching Procedure (TCLP)

SW-846 Method 1311. Analysis of the resultant leachate is used to determine if a solid waste possesses the hazardous characteristic of toxicity. TCLP is designed to determine the mobility of both organic and inorganic analytes present in liquids, solids and multi-phase wastes. The method simulates co-disposal with solid waste in a MSWLF, which is one of the disposal scenarios used in this policy. However, the leachate produced by this method is normally used to analyze for only 40 constituents to determine if the waste possesses the characteristic of toxicity. To determine disposal options under this policy, this leachate must be analyzed for the complete suite of constituents present (i.e. all volatiles, semi-volatiles, pesticides, metals, etc. normally tested under methodologies analyzing for total constituent levels). Leachate testing results should be reported to the lowest available PQLs, not the regulatory reporting limit often submitted for TCLP waste determinations.

Universal treatment standards

Under 40 CFR 268.48, as adopted in 15A NCAC 13A .0112, a list of hazardous constituents used to regulate most prohibited hazardous wastes with numerical limits. Phase IV Land Disposal Restrictions provide alternative LDR treatment standards for contaminated soil (40 CFR 268.49). For the purposes of this policy, soil eligible for disposal in a Subtitle D MSWLF will meet land disposal restrictions if a 90 percent reduction in total and underlying hazardous constituent concentrations has been achieved, or the levels are below 10 times the universal treatment standards.

Unrestricted Use of Soil

Soil in which the constituent levels are protective of human health (through ingestion, inhalation and dermal routes of exposure), and will not leach through the soil to underlying groundwater in exceedance of the NC 2L standards. This soil may remain in place, be used as backfill, or spread on any surface so long as it will not degrade cleaner soil. The Hazardous Waste Section's preference is that the soil be returned to the excavated area, if possible.

8.0 CONTACTS

For information on the contents of this document, contacts at the Division of Waste Management, Hazardous Waste Section are:

Hazardous Waste Section, Raleigh Central Office
Telephone: (919) 707-8200
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Raleigh, NC 27699-1646

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9.0 FREQUENTLY ASKED QUESTIONS (FAQs)

How do you initially determine whether contaminated soil contains listed hazardous waste?

If the contamination occurs after the waste was listed (most waste codes came under regulation in 1980), and the contaminated soil is near a process or storage area that handled these waste codes or in the pathway between, the soil probably “contains” listed hazardous waste. Contact the Hazardous Waste Section for assistance in making this determination which is based on the type of facility involved (TSD, generator or site not regulated under RCRA, respectively).

Can soil background levels be taken into consideration for meeting “contained-out” levels?

No, background levels cannot be taken in consideration for meeting “contained-out” levels. However, background levels can be used to determine whether cleanup levels have been met. If the excavated soil contains only naturally occurring constituents ***and*** is equal or less than the background levels for naturally occurring constituents, that soil may only be spread or used on site, where the background level is relevant. Soil with higher levels of hazardous constituents, even if naturally occurring may not be placed off-site or where underlying cleaner soil could be degraded.

What can be done if concentrations are not available in Attachment 1 for a constituent of concern?

When there are no levels available for constituents of concern, this self-implementing policy ***cannot be used***. A request for “contained-out” levels must be made to the Hazardous Waste Section before excavation of soil begins. There may not be sufficient toxicological or other chemical information available for the HWS to be able to establish these levels.

Do the unrestricted use values presented in this policy affect site-specific clean-up levels approved by either the Hazardous Waste Section or other programs?

First determine if the contaminated soil contains listed hazardous waste. If the contamination is not from hazardous waste, this policy is not applicable to the remedial activity. The risk-based criteria used to determine the unrestricted use levels in this policy are set at extremely conservative levels in order to provide adequate protection under all circumstances. Unrestricted use levels presented in this policy should be considered screening levels. This policy in no way supersedes a site-specific clean-up value that has been determined to be protective to the potential receptors of that contamination. If no site-specific clean-up levels have been approved by the agency providing regulatory oversight, any excavated soil determined to contain hazardous waste must, by default, use the conservative numbers contained within this policy.

ATTACHMENT 1

Table of North Carolina “Contained-Out” Levels for Soil

This table contains the levels established by the Hazardous Waste Section using the criteria listed in Section 6.0 of this guidance document. **This policy is only applicable to soil containing listed hazardous waste that has been excavated.**

For unrestricted use, all levels in this attachment are based on the total analyses of constituents present. If the constituent has been identified as being present during the assessment of contamination, and the “contained-out” level for unrestricted use is below the lab’s method detection limit, the soil is not eligible for unrestricted use. However, there is the possibility that a soil containing such a constituent may meet the requirements for disposal in a Subtitle D lined municipal solid waste landfill. See Section 5.A of this document for further explanation.

For disposal in a MSWLF, total analyses of the soil can be used for all “contained-out” determinations. Based on the results of the total analyses, the facility may opt to further test the soil using TCLP leachate analyses, which may be less conservative, but can only be used for those constituents for which a leachate level is available. If leachate samples are analyzed, the initial total analyses must show the soil either doesn’t contain constituents with a “NA” in the leachate values column of this table, or the total analyses for these constituents are below the applicable total level for MSWLF disposal.

For regulatory reasons, if leachate analyses are used for TCLP constituents, the level must ***be less than*** the leachate value given for that soil to be considered non-hazardous by the toxicity characteristic. All leachate levels using the “<” symbol in this table are TCLP constituents.

In the following table, **ND** and **NA** are defined as:

ND: If an EPA Preliminary Remediation Goal is not available, the constituent must not be detected in the soil, even as an estimated “J” value, for unrestricted use.

NA: Leachate values are not applicable because “contained-out” levels are based on criteria using total values (EPA risk-based PRGs or the Universal Treatment Standards for environmental media).

Refer to Sections 3.0 (Policy) or 4.0 (Other Possible Restrictions) of this document for additional information that may affect how a soil may be used or disposed.

ATTACHMENT 2
CERTIFICATION OF SOIL MEETING NORTH CAROLINA "CONTAINED-OUT" LEVELS

(Any soil containing hazardous waste not meeting these levels must be handled as if they were hazardous, including hazardous waste manifesting.)

I. Soil Location Information

Name of Site _____

EPA ID number (or Not Applicable) _____

If non-RCRA site, designate program with regulatory oversight _____

County _____

Street _____

City _____ State _____ Zip _____

Phone _____
(Area Code)

II. Soil Meeting Unrestricted Use Levels

Description of soil (source of contamination, number of roll-off boxes, area(s) spread on-site).

III. Soil Meeting Levels for Disposal in Subtitle D lined MSWLF

Description of soil (source of contamination, number of roll-off boxes, etc.)

Quantity delivered: Volume in cubic yards and/or weight in tons

Name of receiving landfill _____

Landfill Permit # _____

County _____ State _____

CERTIFICATION OF MEETING NORTH CAROLINA "CONTAINED-OUT" LEVELS

(page 2 of 2)

Physical (not mailing) address of landfill

Street _____

City _____ State _____ Zip _____

Phone _____
(Area Code)

IV. Analytical Information (Submit separate attachments for soil described in Sections II and III)

Attach information from laboratory analyses including:

- Name, address and phone number of the analytical laboratory.
- A spreadsheet of soil levels for each roll-off box with comparison to the required "contained-out" level for that scenario. Data sheets are not needed with this certification, but should be kept by the facility should any questions arise. If leachate levels are used, a summary of both the total and leachate analyses must be included.
- Information on the dilution factor .
- Supply detection limits for all constituents of concern found within the clean-up area for each analysis, whether present in that particular sample or not.

V. Hazardous by Characteristic

It was determined that none of the soil described above has hazardous characteristics:

By testing methodologies (specify here) _____

By generator knowledge (describe here) _____

I hereby certify under penalty of law that the information contained in this document is accurate and that the soil described either met unrestricted use levels or was delivered to the landfill above in the original container or vehicle it was placed in without mixing with any other solid waste. Any soil not meeting these criteria was handled as hazardous waste, including hazardous waste manifesting to a TSD facility. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

Signature of site manager/facility contact _____

Printed name and title of above person _____

Phone _____
(Area Code)

The original of this signed certification must be sent to the project manager within the Division of Waste Management. A copy of this signed certification must be retained at the facility (if applicable) for a minimum of three years.

ATTACHMENT 3 Guidelines for Soil Characterization Sampling

In-Situ Sampling Requirements

Samples collected for waste characterization must be analyzed for those constituents of concern identified in the site assessment. To identify all potential constituents of concern, soil samples collected during in-situ soil assessment should be analyzed for total concentrations of hazardous constituents. In addition to identifying the presence and concentration of hazardous constituents in the soil, assessment sampling should be adequate to determine the vertical and horizontal extent of soil contamination. The facility must report all hazardous constituents detected in assessment sampling, including those detected below the quantitation limit of the laboratory method (i.e. estimated or “J” values).

Sample collection procedures should follow those requirements listed in the facility’s regulatory mechanism (permit, post-closure plan, Administrative Order on Consent, etc.) if applicable. In addition, sample procedures should meet the requirements of the EPA Region 4’s Standard Operating Procedures for in-situ soil sampling. The *Field Branches Quality System and Technical Procedures* contain routine field sampling and measurement procedures, and quality control documents used by field investigators of the two Science and Ecosystem Support Division (SESD) Field Branches: the Ecological Assessment Branch and the Enforcement and Investigations Branch. *The Field Branches Quality System and Technical Procedures* supersede the *“Environmental Investigations Standard Operating Procedures and Quality Assurance Manual” (EISOPQAM), November 2001*, and the *“Ecological Assessment Standard Operating Procedures and Quality Assurance Manual” (EASOPQAM), January 2002*. The SOPs describes the type of sample container, chain-of-custody, order of sample collection, etc. and other requirements to be followed when collecting samples for a waste determination. The documents are available for download at: <http://www.epa.gov/region4/sesd/eib.html> and <http://www.epa.gov/region4/sesd/fbqstp/>

Waste Characterization Sampling Requirements

Once the in-situ assessment is determined adequate, remediation requirements (if any) should be developed. If removal of contaminated soil is selected as the preferred method of remediation, the facility must provide a workplan to be approved by the Hazardous Waste Section (Section) or appropriate agency having regulatory oversight of the project. This workplan should, at a minimum, describe excavation procedures, sampling requirements, procedures to prevent releases of and exposures to contaminants (run-on/run-off control, liners/covers, worker safety, etc.) and decontamination procedures to be used during remediation activities. The workplan should describe how contaminant releases will be prevented from the time excavation of the soil begins until its disposal in a hazardous or solid waste landfill or until contaminant concentrations have been reduced enough to allow unrestricted use of the soil.

During removal, the soil will be placed into covered containers or staging piles. *Staging piles/CAMUs must be pre-approved (refer to Section 5, Waste Determination in this policy).* Samples will then be collected from the container or stockpile to characterize the soil for

disposal options. The facility should take care to properly mark sample locations and individual sections of staging piles for future reference. Sample collection procedures should follow those requirements in the EPA SOP manual including type of sample container, chain-of-custody, order of sample collection, etc. Disposal options for the soil should be described in the workplan and will be based on analytical results of this sampling.

Collection Procedure for Waste Characterization (Non-volatile)

One composite sample will be required for each roll-off box or 25 cubic yards of soil from a stockpile. When sampling a roll-off box or stockpile, a minimum of two sampling locations should be selected at random. Using an auger or a shelby tube, an aliquot of soil will be collected from the upper, middle, and bottom portion at each sample location. The sample aliquots should be mixed per EPA SOP manual requirements and composited into one sample for laboratory analysis. The facility should ensure they collect enough sample for total concentration and leachate testing if required.

Collection Procedure for Waste Characterization (Volatile)

At least two primary samples should be collected from each roll-off box or 25 cubic yards of soil from a stockpile. When sampling a roll-off box or stockpile, sample locations will be selected at random. Primary samples will be collected by filling two sample containers at each sample location. Sample aliquots must be collected from the middle or lower portion of the boring at each sample location using an auger or shelby tube.

Analytical Procedures

Samples will be analyzed for total concentrations of the constituents of concern identified during assessment sampling. If any constituents of concern are volatile organic compounds, two discrete grab samples per roll-off box (or 25 cubic yards) must be analyzed. The samples for VOC analyses should come from two separate sampling locations within the roll-off box. Based on the results of total concentration analyses, leachate extraction and analysis of the leachate may be desired. If so, use the second VOC sample container from that location. If no volatiles were found during assessment sampling, the determination will only require the single composite sample described above per 25 cubic yards or roll-off box.

Samples needing leachate analyses will be extracted using the leaching procedure in SW-846 Method 1311. The extract from each sample will then be analyzed for all constituents of concern identified during assessment sampling. Appropriately sensitive analytical methods, capable of detecting constituents of concern at the lowest possible detection limit, should be utilized to analyze the extract.

Analytical results should be scientifically valid, defensible and of known precision and accuracy. Information required from the laboratory include data from laboratory quality control samples and the corresponding acceptance criteria, a laboratory narrative noting any problems with the data, method detection and quantitation limits, and identification of any estimated values of constituents detected below the quantitation limit.

Reporting

In addition to the constituents of concern, analytical results of all analytes detectable by a particular method should be reported. Any detection of a hazardous constituent (including detections below the method quantitation limit) should be reported. This information will be used to determine the disposal options for the contaminated soil.

Disposal Options

It is recommended that preparations for different disposal options occur prior to excavation. Excavated soil has the following disposal options: 1) soil that does not contain hazardous constituents above the levels that are described in this policy may be sent to a Subtitle D MSWLF, 2) soil that does not contain hazardous constituents above unrestricted use levels may be used on-site, or 3) soil containing hazardous constituents above “contained-out” levels must be managed as hazardous waste and transported to a Subtitle C landfill or treatment facility with the associated hazardous waste manifesting.

Remedial activities at regulated units and Solid Waste Management Units may generate hazardous waste that will trigger a change in generator status. When there is a change in generator status, the HWS must be notified using a Notification of Regulated Waste Activity (Form 8700-12). In addition, the change in generator status may create a change in the generator requirements of the facility. The facility is responsible for assuring compliance with these changes. Generator requirements are outlined in 40 CFR 262, as adopted in 15A NCAC 13A .0107. If the generator status changes back after remediation activities are completed, the facility can submit another EPA 8700-12 Notification form to make this change.

ATTACHMENT 1: NORTH CAROLINA'S "CONTAINED-OUT" LEVELS FOR SOIL

Subject to Revision Values rounded to two (2) significant figures		Levels For Unrestricted Use	Levels For Disposal in a MSWLF	
Common Name	CAS #	Total Values (mg/kg)	Total Values (mg/kg)	Leachate Values (mg/l) <small>(for TCLP constituents in Table 1, 40 CFR 261.24, the value must be less than given value)</small>
1 Acenaphthene	83-32-9	8.2	34	NA
2 Acenaphthylene	208-96-8	11.0	34	NA
3 Acetone	67-64-1	2.8	1,400	70
4 Acetonitrile; Methyl cyanide	75-05-8	0.40	200	10
5 Acetophenone; Acetyl benzene	98-86-2	0.0004	0.1	0.0042
6 Acrolein; Acryl aldehyde	107-02-8	0.0004	0.1	0.0042
7 Acrylamide	79-06-1	0.00003	0.02	0.0008
8 Acrylonitrile	107-13-1	0.00039	0.078	0.0039
9 Alachlor	15972-60-8	0.008	1.7	0.084
10 Aldicarb	116-06-3	0.36	72	3.6
11 Aldicarb sulfone	1646-88-4	0.36	2.8	NA
12 Aldrin	309-00-2	0.029	0.10	NA
13 Aluminum	7429-90-5	360	72,000	3,600
14 Allyl chloride	107-05-1	17	20	1
15 Aniline; Amino benzene	62-53-3	0.12	24	1.2
16 Anthracene	120-12-7	1,000	4,200	210
17 Antimony (and compounds)	7440-36-0	5.4	30	1.5
18 Aramite	140-57-8	0.027	5.4	0.27
19 Arsenic	7440-38-2	0.39	100	< 5
20 Atrazine	1912-24-9	0.024	6	0.3
21 Barium (and compounds)	7440-39-3	850	2,000	< 100
22 Benzene	71-43-2	0.0056	10	< 0.5
23 Benzo[a]anthracene; Benzanthracene	56-55-3	0.343	2	NA
24 Benzo[b]fluoranthene	205-99-2	0.62	2.1	NA
25 Benzo[k]fluoranthene	207-08-9	6.2	21	NA
26 Benzo[ghi]perylene	191-24-2	470	6,700	NA
27 Benzo[a]pyrene	50-32-8	0.062	0.21	NA
28 Benzoic acid	65-85-0	110	56,000	2,800
29 Benzyl alcohol	100-51-6	110	22,000	1100
30 Beryllium (and compounds)	7440-41-7	3.4	150	7.3
31 alpha-BHC (HCH)	319-84-6	0.00011	0.022	0.0011
32 beta-BHC (HCH)	319-85-7	0.00037	0.074	0.0037
33 gamma-BHC; Lindane	58-89-9	0.0062	8	< 0.4
34 Bis(2-chloroethyl)ether; Dichloroethyl ether	111-44-4	0.00017	0.062	0.0031
35 Bis(2-chloro-1-methylethyl) ether; 2,2'-Dichlorodiisopropyl ether	108-60-1	0.001	0.54	0.027
36 Bis or di (2-ethylhexyl) phthalate	117-81-7	6.7	120	NA
37 Boron	7440-42-8	20	630	32
38 Bromodichloromethane	75-27-4	0.0029	1.12	0.056
39 Bromoform; Tribromomethane	75-25-2	0.029	8.90	0.44
40 n-Butylbenzene	104-51-8	4.3	140	7
41 sec-Butylbenzene	135-9-88	3.3	140	7
42 tert-Butylbenzene	98-06-6	3.4	140	7
43 Butyl benzyl phthalate	85-68-7	28	200	10
44 Cadmium (and compounds)	7440-43-9	0.95	20	< 1
45 Caprolactam	105-60-2	35	7,000	350
46 Carbofuran	1563-66-2	0.25	1.4	NA
47 Carbon disulfide	75-15-0	4.9	720	NA
48 Carbon tetrachloride	56-23-5	0.0024	10	< 0.5
49 Chlordane	57-74-9	0.100	0.6	< 0.03
50 p-Chloroaniline (4-chloroaniline)	106-47-8	0.7	160	NA
51 Chlorobenzene	108-90-7	0.44	2,000	< 100
52 Chlorobenzilate	510-15-6	0.0025	0.5	0.025

ND = Not detected
NA = Not Applicable

ATTACHMENT 1: NORTH CAROLINA'S "CONTAINED-OUT" LEVELS FOR SOIL

Subject to Revision Values rounded to two (2) significant figures		Levels For Unrestricted Use	Levels For Disposal in a MSWLF	
Common Name	CAS #	Total Values (mg/kg)	Total Values (mg/kg)	Leachate Values (mg/l) <small>(for TCLP constituents in Table 1, 40 CFR 261.24, the value must be less than given value)</small>
53 Chloroethane: Ethyl chloride	75-00-3	3.0	6.5	
54 Chloroform (Trichloromethane)	67-66-3	0.22	120	< 6
55 2-Chloronaphthalene (beta-)	91-58-7	4.9	56	NA
56 2-Chlorophenol	95-57-8	0.0043	0.72	0.036
57 Chloroprene (2-Chloro-1,3-butadiene)	126-99-8	0.14	2.8	NA
58 2-Chlorotoluene	95-49-8	1.4	280	14
59 Chromium (total) (assum. for Reg. 9 levels--1:6 ratio Cr VI:Cr III)	7440-47-3	27	100	< 5
60 Chromium III	16065-83-1	550	100,000	NA
61 Chromium VI	18540-29-9	30	64	NA
62 Chrysene	218-01-9	38	210	NA
63 Cobalt	7440-48-4	7.3	1,500	73
64 Copper	7440-50-8	700	2,000	100
65 m-Cresol (3-Methylphenol)	108-39-4	0.35	4,000	< 200
66 o-Cresol (2-Methylphenol)	95-48-7	10.5	4,000	< 200
67 p-Cresol (4-Methylphenol)	106-44-5	0.017	4,000	< 200
68 Cyanide (free)	57-12-5	11	35	NA
69 2,4-D: 2,4-Dichlorophenoxyacetic acid	94-75-7	0.31	200	< 10
70 4,4'-DDD	72-54-8	0.13	10	NA
71 4,4'-DDE	72-55-9	0.002	7	NA
72 4,4'-DDT	50-29-3	1.4	7	NA
73 Dalapon	75-99-0	11	2,200	110
74 Diallate	2303-16-4	0.011	2.2	0.11
75 Dibenz[a,h]anthracene	53-70-3	0.062	0.21	NA
76 Dibenzofuran	132-64-9	4.7	56	2.8
77 Dibromochloromethane; Chlorodibromomethane	124-48-1	0.0017	0.82	0.041
78 1,2-Dibromo-3-chloropropane: DBCP	96-12-8	0.00015	0.05	0.0025
79 1,2-Dibromoethane: Ethylene dibromide	106-93-4	0.000002	0.0008	0.00004
80 Di-n-butyl phthalate	84-74-2	25	280	NA
81 m-Dichlorobenzene (1,3-)	541-73-1	6.5	340	17
82 o-Dichlorobenzene (1,2-)	95-50-1	0.28	48	2.4
83 p-Dichlorobenzene (1,4-)	106-46-7	0.0	150	< 7.5
84 3,3'-Dichlorobenzidine	91-94-1	0.007	0.3	0.015
85 trans-1,4-Dichloro-2-butene	764-41-0	0.000012	0.0024	0.00012
86 Dichlorodifluoromethane	75-71-8	94	310	NA
87 1,1-Dichloroethane	75-34-3	0.38	60	NA
88 1,2-Dichloroethane; Ethylene dichloride	107-06-2	0.0018	10	< 0.5
89 1,1-Dichloroethylene; Vinylidene chloride	75-35-4	0.044	14	< 0.7
90 cis-1,2-dichloroethylene	156-59-2	0.35	140	7
91 trans-1,2-Dichloroethylene	156-60-5	0.54	200	10
92 2,4-Dichlorophenol	120-83-2	1.0	140	NA
93 1,2-Dichloropropane	78-87-5	0.0026	0.74	NA
94 1,3-Dichloropropene (total cis- & trans-)	542-75-6	0.00091	0.38	0.019
95 Dieldrin	60-57-1	0.0011	0.0044	0.00022
96 Diethyl phthalate	84-66-2	28	280	NA
97 Dimethoate	60-51-5	0.073	15	0.73
98 3,3'-Dimethylbenzidine	119-93-7	0.00029	0.058	0.0029
99 2,4-Dimethylphenol (m-xylene)	105-67-9	1.2	140	NA
100 alpha, alpha-Dimethylphenylamine	122-09-8	0.036	72	3.6
101 Dimethyl phthalate	131-11-3	3,600	3,600	NA
102 m-Dinitrobenzene (1,3-)	99-65-0	0.036	7.2	0.36
103 2,4-Dinitrophenol	51-28-5	0.3	150	7.3
104 2,4-Dinitrotoluene	121-14-2	0.0008	2.6	< 0.13

ND = Not detected
NA = Not Applicable

ATTACHMENT 1: NORTH CAROLINA'S "CONTAINED-OUT" LEVELS FOR SOIL

Subject to Revision
 Values rounded to two (2) significant figures

	Common Name	CAS #	Levels For Unrestricted Use	Levels For Disposal in a MSWLF	
			Total Values (mg/kg)	Total Values (mg/kg)	Leachate Values (mg/l) <small>(for TCLP constituents in Table 1, 40 CFR 261.24, the value must be less than given value)</small>
105	2,6-Dinitrotoluene	606-20-2	0.0007	72	3.6
106	Dinoseb; DNBP; 2-sec-Butyl-4,6-dinitrophenol	88-85-7	0.36	25	NA
107	Di-n-octyl phthalate	117-84-0	2,400	10,000	NA
108	1,4-Dioxane (p-dioxane)	123-91-1	0.028	14	0.7
109	Diphenyl (1,1-Biphenyl)	92-52-4	8.9	350	NA
110	Diphenylamine	122-39-4	9.1	130	NA
111	Disulfoton	298-04-4	0.0028	0.56	0.028
112	Endosulfan	115-29-7	18	440	22
113	Endosulfan II	33213-65-9	ND	1.3	NA
114	Endothall	145-73-3	7.3	1,500	73
115	Endrin (total also includes endrin aldehyde and endrin ketone)	72-20-8	0.44	0.4	< 0.02
116	Epichlorohydrin	106-89-8	0.015	7.1	0.35
117	Ethyl acetate	141-78-6	11	330	NA
118	Ethylbenzene	100-41-4	4.6	20	NA
119	Ethylene glycol	107-21-1	56	28,000	1400
120	Ethyl methacrylate	97-63-2	5.5	140	NA
121	Fluoranthene	206-44-0	280	560	28
122	Fluorene	86-73-7	44	560	28
123	Fluoride	16984-48-8	20	4,000	200
124	Glyphosate	1071-83-6	36	7,200	360
125	Heptachlor	76-44-8	0.0023	0.16	< 0.008
126	Heptachlor epoxide	1024-57-3	0.0063	0.008	0.0004
127	Heptane (n-heptane)	142-82-5	ND	4,200	210
128	Hexachlorobenzene	118-74-1	0.03	2.6	< 0.13
129	Hexachlorobutadiene	87-68-3	0.257	10	< 0.5
130	Hexachlorocyclopentadiene	77-47-4	200	440	22
131	Hexachloroethane	67-72-1	0.5	60	< 3
132	Hexachlorophene (Hexachloropropylene)	70-30-4	0.11	22	1.1
133	Hexane (n-hexane)	110-54-3	37	110	NA
134	2-Hexanone (methyl butyl ketone)	591-78-6	1.9	560	28
135	Indeno (1,2,3-cd)pyrene	193-39-5	0.62	2.1	NA
136	Isobutyl alcohol	78-83-1	18	1,700	NA
137	Isophorone	78-59-1	0.18	74	3.7
138	Isopropyl benzene (Cumene)	98-82-8	1.7	140	7
139	Isopropyl Ether	108-20-3	160	140	7
140	Kepone	143-50-0	0.000084	0.017	0.00084
141	Lead	7439-92-1	270	100	< 5
142	Mercury and compounds	7487-94-7	0.015	4	< 0.2
143	Methacrylonitrile	126-98-7	0.01	2	0.1
144	Methanol	67-56-1	14	150	7.5
145	Methoxychlor	72-43-5	56	200	< 10
146	Methyl bromide; Bromomethane	74-83-9	0.2	13	NA
147	Methyl chloride; Chloromethane	74-87-3	0.020	5.2	0.26
148	Methylene bromide; Dibromomethane	74-95-3	0.61	120	6
149	Methylene chloride; Dichloromethane	75-09-2	0.02	9	0.5
150	Methyl ethyl ketone; MEK; 2-butanone	78-93-3	17	4,000	< 200
151	Methyl methacrylate	80-62-6	14	1,600	NA
152	2-Methylnaphthalene	91-57-6	1.7	28	1.4
153	Methyl parathion; Parathion methyl	298-00-0	0.091	18	0.9
154	4-Methyl-2-pentanone; Methyl isobutyl ketone (MIBK)	108-10-1	8.1	330	NA
155	Methyl tert-butyl ether (MTBE)	1634-04-4	0.92	160	NA

ND = Not detected
 NA = Not Applicable

ATTACHMENT 1: NORTH CAROLINA'S "CONTAINED-OUT" LEVELS FOR SOIL

Subject to Revision Values rounded to two (2) significant figures		Levels For Unrestricted Use	Levels For Disposal in a MSWLF		
	Common Name	CAS #	Total Values (mg/kg)	Total Values (mg/kg)	Leachate Values (mg/l) <small>(for TCLP constituents in Table 1, 40 CFR 261.24, the value must be less than given value)</small>
156	Naphthalene	91-20-3	0.58	42	2.1
157	Nickel	7440-02-0	56	200	10
158	o-Nitroaniline (2-nitroaniline)	88-74-4	0.01	140.0	NA
159	Nitrobenzene	98-95-3	0.1	40	< 2
160	p-Nitrophenol (4-nitrophenol)	100-02-7	2.9	290	NA
161	N-Nitrosodi-n-butylamine	924-16-3	0.00002	0.004	0.0002
162	N-Nitrosodiethylamine	55-18-5	0.0000045	0.0009	0.000045
163	N-Nitrosodimethylamine	62-75-9	0.000007	0.0014	0.00007
164	N-Nitrosodiphenylamine	86-30-6	1	28	1.4
165	N-Nitrosodipropylamine; Di-n-propylnitrosoamine	621-64-7	0.00005	0.019	0.00096
166	N-Nitrosomethylethylamine	10595-95-6	0.000031	0.0062	0.00031
167	N-Nitrosopyrrolidine	930-55-2	0.00032	0.064	0.0032
168	Oxamyl (Vydate)	23135-22-0	0.71	2.8	NA
169	Parathion	56-38-2	2.2	46	NA
170	Pentachlorobenzene	608-93-5	0.29	58	2.9
171	Pentachloronitrobenzene	82-68-8	0.0026	0.52	0.026
172	Pentachlorophenol	87-86-5	0.022	2,000	< 100
173	Phenanthrene	85-01-8	60	420	21
174	Phenol	108-95-2	1.8	62	NA
175	p-Phenylenediamine	106-50-3	69	14,000	690
176	Phorate	298-02-2	0.014	2.8	0.14
177	Picloram	1918-02-1	26	5,200	260
178	Polychlorinated biphenyls; PCBs	1336-36-3	0.00034	50	NA
179	Pronamide	23950-58-5	27	5400	270
180	n-Propylbenzene	103-65-1	1.7	140	7
181	Pydrin (Fenvalerate)	51630-58-1	9.1	1820	91
182	Pyrene	129-00-0	290	420	21
183	Pyridine	110-86-1	0.36	100	< 5
184	Selenium	7782-49-2	12	20	< 1
185	Silver	7440-22-4	0.22	100	< 5
186	Silvex; 2,4,5-TP	93-72-1	2.8	20	< 1
187	Simazine	122-34-9	0.027	8	0.4
188	Styrene (Ethenylbenzene)	100-42-5	2.2	200	10
189	2,4,5-T;2,4,5-Trichlorophenoxyacetic acid	93-76-5	3.6	79	NA
190	2,3,7,8-TCDD; 2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	0.0000039	0.000016	NA
191	1,2,4,5-Tetrachlorobenzene	95-94-3	0.11	22	1.1
192	1,1,1,2-Tetrachloroethane	630-20-6	0.0043	0.86	0.043
193	1,1,2,2-Tetrachloroethane	79-34-5	0.00095	0.34	0.017
194	Tetrachloroethylene;Perchloroethylene; Tetrachloroethene	127-18-4	0.0074	14	< 0.7
195	2,3,4,6-Tetrachlorophenol	58-90-2	2.1	74	NA
196	Tetraethyl dithiopyrophosphate; Sulfotepp	3689-24-5	0.18	36	1.8
197	Tetrahydrofuran	109-99-9	0.007	3.2	0.16
198	Thallium	7440-28-0	0.51	4.8	0.24
199	Tin		220	44,000	2,200
200	Toluene	108-88-3	7.3	100	NA
201	Toxaphene	8001-35-2	0.06	10	< 0.5
202	1,2,4-Trichlorobenzene	120-82-1	2.6	14	0.72
203	1,1,1-Trichloroethane; Methyl-chloroform	71-55-6	1.7	60	NA
204	1,1,2-Trichloroethane	79-00-5	0.017	0.4	0.02
205	Trichloroethylene; Trichloroethene	79-01-6	0.018	10	< 0.5
206	Trichlorofluoromethane	75-69-4	32	300	NA
207	2,4,5-Trichlorophenol	95-95-4	40.5	8,000	< 400

ND = Not detected
NA = Not Applicable

ATTACHMENT 1: NORTH CAROLINA'S "CONTAINED-OUT" LEVELS FOR SOIL

Subject to Revision Values rounded to two (2) significant figures		Levels For Unrestricted Use	Levels For Disposal in a MSWLF		
	Common Name	CAS #	Total Values (mg/kg)	Total Values (mg/kg)	Leachate Values (mg/l) <small>(for TCLP constituents in Table 1, 40 CFR 261.24, the value must be less than given value)</small>
208	2,4,6-Trichlorophenol	88-06-2	0.2	40	< 2
209	1,2,3-Trichloropropane	96-18-4	0.00005	0.01	NA
210	1,1,2-Trichloro-1,2,2-trifluoroethane (CFC 113)	76-13-1	2,100	2,100	NA
211	1,2,4-Trimethylbenzene	95-63-6	7.5	170	NA
212	1,3,5-Trimethylbenzene	108-67-8	7.3	70	NA
213	1,3,5-Trinitrobenzene	99-35-4	11	2,200	110
214	Vanadium	7440-62-2	550	7,200	NA
215	Vinyl acetate	108-05-4	1.7	820	41
216	Vinyl chloride	75-01-4	0.000095	4	< 0.2
217	Xylene (total) (dimethyl benzene)	1330-20-7	5	300	NA
218	Zinc	7440-66-6	550	2,100	105