

Sec. 22a-133k-2. Remediation Standards for Soil

(a) Soil Criteria

Unless otherwise specified in the RSRs, polluted soil at a release area shall be remediated so that the concentration of a substance in such soil is equal to or less than:

- (1) The direct exposure criteria and the pollutant mobility criteria; or
- (2) The background concentration for soil.

(b) Direct Exposure Criteria

(1) Residential Direct Exposure Criteria

Except as otherwise specified in the RSRs, polluted soil at a release area shall be remediated so that the concentrations of substances in such soil are equal to or less than the residential direct exposure criteria.

(2) Use of Industrial/Commercial Direct Exposure Criteria

(A) Except for soil polluted with PCBs, polluted soil at a release area may be remediated so that the concentrations of substances in such soil are equal to or less than the industrial/commercial direct exposure criteria provided that:

- (i) The subject area is not currently used for any residential activity;
- (ii) Access to the parcel containing such release area is limited to individuals working at or temporarily visiting the subject parcel for industrial/commercial activity; and
- (iii) An EUR is in effect for the subject area, which restriction shall:
 - (I) Prohibit residential activity; and
 - (II) Require compliance with clause (ii) of this subparagraph.

(B) Soil polluted with PCBs at a release area may be remediated so that the concentration of PCBs in such soil is equal to or less than the industrial/commercial direct exposure criteria for PCBs, provided that:

- (i) The subject area is not currently used for any residential activity;
- (ii) The parcel on which PCBs are present is used in accordance with title 40 CFR Part 761, including, but not limited to, those provisions of 40 CFR Part 761 regarding the requirement for high-occupancy areas;
- (iii) The parcel upon which such release area is located is an outdoor electrical substation as defined in 40 CFR 761.123, or an other restricted access non-substation location, as defined in 40 CFR 761.123; and
- (iv) An ELUR is in effect for the subject area, which restriction shall:
 - (I) Prohibit residential activity; and
 - (II) Require compliance with clauses (ii) and (iii) of this subparagraph.

(3) Conditional Exemptions for Inaccessible Soil

The provisions of this subdivision do not apply to soil polluted with PCBs.

(A) Soil at a release area that is fifteen feet or more below the ground surface is not required to be remediated to the direct exposure criteria.

(B) Inaccessible soil at a release area is not required to be remediated to the direct exposure criteria, provided that an EUR is in effect for the subject area, which restriction shall:

- (i) Prohibit exposure to inaccessible soil, including, but not limited to, as a result of excavation, demolition, other intrusive activities, or natural occurrences;
- (ii) Require that if soil is used to render polluted soil inaccessible, such soil is maintained

and immediately replaced, as needed, to maintain the four (4) feet of soil cover and topography of the ground surface; and

(iii) Require, as applicable, that:

(I) Bituminous or reinforced concrete that renders the soil inaccessible is maintained in good condition, and free of gaps or cracks that could expose such soil;

(II) A building that is used to render soil inaccessible shall consist of a roof, exterior walls, and a concrete floor, maintained in good condition and free of gaps or cracks that could expose such soil and such building shall not be removed; or

(III) Provided that written notice is submitted to the commissioner, a permanent structure that renders the soil inaccessible, shall be maintained in good condition to the extent required to prevent exposure of such soil and shall not be removed.

(4) Conditional Exemption for Inaccessible Soil Polluted with PCBs

(A) Unless alternative criteria have been approved in accordance with subsection (d)(2) of this section, inaccessible soil polluted with PCBs may be remediated to the concentrations specified in subparagraph (B) of this subdivision, provided that an ELUR is in effect for the subject area, which restriction shall:

(i) Prohibit exposure to such inaccessible soil, including, but not limited to, as a result of excavation, demolition, other intrusive activities, or natural occurrences;

(ii) Prohibit residential activity;

(iii) Require that if soil is used to render polluted soil inaccessible, that such soil used to render polluted soil inaccessible is maintained and immediately replaced, as needed, to maintain the elevation and topography of the ground surface; and

(iv) Require, as applicable, that:

(I) Bituminous or reinforced concrete that renders the soil inaccessible is maintained in good condition and free of gaps or cracks that could expose such soil;

(II) A building that is used to render soil inaccessible shall consist of a roof, exterior walls, and a concrete floor, maintained in good condition and free of gaps or cracks that could expose such soil and such building shall not be removed; or

(III) Provided that written notice is submitted to the commissioner, a permanent structure approved in writing by the commissioner that renders the soil inaccessible shall be maintained in good condition to the extent required to prevent exposure of such soil and shall not be removed.

(B) Provided the requirements of subparagraph (A) of this subdivision are met, inaccessible soil at a release area polluted with PCBs may be remediated so that the concentrations of PCBs in such soil are equal to or less than:

(i) Ten (10) ppm PCBs by dry weight; and

(ii) Twenty-five (25) ppm PCBs by dry weight if such inaccessible soil is located on an "other restricted access (nonsubstation) location" or an "outdoor electrical substation" as those terms are defined in 40 CFR 761.123, provided that PCBs may be remediated to fifty (50) ppm by dry weight at an outdoor electric substation if a label or notice is visibly placed in the area in accordance with 40 CFR 761.125(c)(2).

(5) Conditional Exemption for Incidental Sources

Soil at a release area polluted with metals, petroleum hydrocarbons, or semi-volatile organic substances is not required to be remediated to the direct exposure criteria for those

substances, provided such pollution is the result of:

(A) An incidental release due to the normal operation of motor vehicles, not including refueling, repair or maintenance of a motor vehicle; or

(B) Normal paving and maintenance of a consolidated bituminous concrete surface, provided such bituminous concrete surface has been maintained for its intended purpose.

(6) Conditional Exemption for Soil Polluted with Pesticides

Soil polluted with pesticides at a release area as a result of the application of pesticides is not required to be remediated to the direct exposure criteria for such pesticides, provided that a determination has been made that such pesticides are present solely as a result of the application of pesticides and:

(A) If the release area is used for residential activity:

(i) Protective measures are developed, implemented, and maintained to prevent human exposure to soil polluted with pesticides that exceeds residential direct exposure criteria. At a minimum, such measures shall consist of:

(I) Blending existing soil so that the concentration of substances for such pesticides in the top one (1) foot of soil are equal to or less than the direct exposure criteria, except for the area around existing mature trees;

(II) Covering soil with pavement, hardscape, buildings, or permanent structures; or

(III) Growing dense or vexatious vegetation on steep slopes to minimize the potential for direct exposure and erosion; and

(ii) An EUR is in effect for the subject area, which restriction shall:

(I) Identify the nature and extent of soil polluted with pesticides above residential direct exposure criteria and serve as notice of such polluted soil; and

(II) Require compliance with clause (i) of this subparagraph.

(B) If the release area is used for industrial/commercial activity:

(i) A soil management plan shall be developed, implemented, and maintained which plan shall include protective measures and ensure, at a minimum that any soil that exceeds the industrial/commercial direct exposure criteria is not exposed, including, but not limited to, as a result of excavation, demolition, or other activities and that any such soil is managed, restored, or disposed in a manner that is protective of human health and the environment and prevents human exposure to such soil, except that such soil management plan need not apply to any portion of a release area that is currently used for raising crops where pesticides are used; and

(ii) An EUR is in effect for the subject area, which restriction shall:

(I) Prohibit residential activity; and

(II) Require compliance with clause (i) of this subparagraph.

(7) Direct Exposure Criteria for Additional Polluting Substances

(A) Substances at a particular release area, for which direct exposure criteria are not specified in Appendix A of the RSRs shall be remediated to background concentration or to criteria obtained pursuant to this subdivision. A request under this subdivision shall be submitted to the commissioner in accordance with section 22a-133k-1(g) of the RSRs, and shall also include:

(i) A proposed risk-based direct exposure criterion calculated in accordance with Appendix G of the RSRs, for each substance in such request;

- (ii) The laboratory reporting limit for each substance; and
- (iii) Any information about the health effects each substance may cause due to exposure pathways not accounted for in the risk-based direct exposure criterion proposed under clause (i) of this subparagraph.

(B) The commissioner may approve or deny in writing a request made under subparagraph (A) of this subdivision. No request shall be approved unless it is demonstrated to the commissioner's satisfaction that the requirements of this subdivision have been satisfied and that the proposed direct exposure criteria will be protective of human health and the environment.

(C) Unless prohibited in writing by the commissioner, criteria approved by the commissioner pursuant to subparagraph (A) of this subdivision, may be the subject of a request for alternative criteria under subsection (d)(2)(A) of this subsection.

(c) Pollutant Mobility Criteria

(1) Pollutant Mobility Criteria

(A) Except as otherwise specified in the RSRs, polluted soil at a release area located in a GA area shall be remediated to the seasonal low water table; whereas polluted soil at a release area located in a GB area shall be remediated to the seasonal high water table. All such polluted soil shall be remediated so that the concentrations of substances in such soil are equal to or less than the applicable pollutant mobility criteria, as determined using:

(i) Analytical results reported on a per mass basis in mg/kg analysis for such substances, other than inorganic substances and PCBs; and

(ii) TCLP or SPLP analysis expressed in mg/L, or mass analysis in mg/kg divided by twenty, for inorganic substances and PCBs.

(B) In GA areas, if it is determined that remediation to the seasonal low water table is technically impracticable or would not result in the permanent elimination of a source of pollution, this subsection shall apply to polluted soil above the seasonal high water table.

(2) Optional Criteria for Polluted Soil in a GA Area

(A) Polluted Soil in any GA Area

Substances in polluted soil in a GA area may be remediated to a concentration equal to or less than the groundwater protection criteria for such substance based upon the analytical laboratory results of a TCLP or SPLP analysis.

(B) Polluted Soil, Except for PCBs or ETPH, in Certain GA Areas

(i) Substances, except for either PCBs or ETPH, in polluted soil in a GA area, may be remediated to a concentration at which the analytical laboratory results of:

(I) TCLP or SPLP analysis for such substance in soil is equal to or less than ten (10) times the groundwater protection criteria;

(II) TCLP or SPLP analysis for such substance in soil is equal to or less than the groundwater protection criteria multiplied by an alternative dilution or dilution and attenuation factor, approved in writing by the commissioner in accordance with subsection (d)(3)(B) of this section;

(III) Mass analysis for such substance in soil, is equal to or less than ten (10) times the applicable pollutant mobility criteria in Appendix B of the RSRs or approved in writing by the commissioner in accordance with subsection (c)(6) of this section; or

(IV) Mass analysis for such substance in soil is equal to or less than the applicable

pollutant mobility criteria multiplied by an alternative dilution or dilution and attenuation factor approved in writing by the commissioner in accordance with subsection (d)(3)(B) of this section.

(ii) The remediation standards specified in clause (i) of this subparagraph may be used only if conditions at a release area satisfy the requirements of subparagraphs (C) and (D) of this subdivision and the notice requirements of subparagraph (E) of this subdivision are satisfied.

(C) Conditions at a release area shall comply with the following requirements:

(i) NAPL is not present as determined in accordance with subdivision (4) of this subsection;

(ii) The water table is at least fifteen (15) feet above the surface of the bedrock; and

(iii) The downward vertical flow velocity of groundwater is equal to or less than the horizontal flow velocity.

(D) Conditions at the release area shall satisfy clause (i) or (ii) of this subparagraph.

(i) (I) A public water supply distribution system is available within two hundred (200) feet of the parcel on which the release area is located, within two hundred (200) feet of all adjacent parcels, and within two hundred (200) feet of any parcel within the areal extent of the groundwater plume from the subject release area;

(II) The groundwater within the areal extent of the groundwater plume from the subject release area is not used for drinking water;

(III) No public or private water supply wells exist within five hundred (500) feet of the subject release area; and

(IV) The groundwater affected by the subject release area is not a potential public water supply resource or in an aquifer protection area; or

(ii) The groundwater plume resulting from the subject release is a diminishing state groundwater plume and either:

(I) The concentration of any substance in the groundwater plume from the subject release area and within seventy-five (75) feet of the nearest downgradient parcel boundary is equal to or less than the groundwater protection criteria; or

(II) The concentration of any substance within the groundwater plume from the subject release area is equal to or less than the groundwater protection criteria for such substance at a location downgradient of the subject release area, on the subject parcel, and within twenty-five (25) feet of such release area .

(E) Written notice of the use of optional criteria calculated by an LEP under subparagraph (B) of this subdivision shall be submitted to the commissioner in accordance with section 22a-133k-1(g) of the RSRs.

(3) Optional Criteria for Polluted Soil in a GB Area

(A) Polluted Soil in a GB Area

Provided that NAPL is not present in the release area above the seasonal high water table, as determined in accordance with subdivision (4) of this subsection, substances in soil in a GB area may be remediated to a concentration at which the results of a TCLP or SPLP analysis of each substance is equal to or less than the groundwater protection criteria:

(i) Multiplied by ten (10);

(ii) Multiplied by the ratio of the summation of the downgradient area and upgradient

area compared to the release area, provided that such ratio is equal to or less than five hundred (500); or

(iii) Multiplied by an alternative dilution or dilution and attenuation factor approved in writing by the commissioner in accordance with subsection (d)(3) of this section.

(B) Optional Criteria Based Upon Release-Specific Dilution in a GB Area

(i) The criteria in this clause may only be used if the requirements in clauses (ii) and (iii) of this subparagraph are satisfied. Except for soil polluted with PCBs, substances in soil in a GB area may be remediated to a concentration at which the results of either:

(I) Mass analysis for each substance is equal to or less than the pollutant mobility criteria applicable to such substance in a GA area multiplied by a release-specific dilution factor calculated in accordance with clause (iv) of this subparagraph; or

(II) TCLP or SPLP analysis for each substance is equal to or less than the groundwater protection criterion for such substance multiplied by a release-specific dilution factor calculated in accordance with clause (iv) of this subparagraph.

(ii) Conditions at the subject release area comply with the following requirements:

(I) NAPL is not present above the seasonal high water table as determined in accordance with subdivision (4) of this subsection;

(II) The water table is at least fifteen (15) feet above the surface of the bedrock;

(III) The downward vertical flow velocity of groundwater is equal to or less than the horizontal flow velocity; and

(IV) For each substance in groundwater, the background concentration is equal to or less than the groundwater protection criteria.

(iii) Written notice of the use of optional criteria calculated by an LEP under this subparagraph shall be submitted to the commissioner in accordance with section 22a-133k-1(g) of the RSRs and shall also include the calculation in clause (iv) of this subparagraph, value and basis of terms, and the till infiltration rate and dilution factor from the following table, based on the geologic material and infiltration rate.

Geologic Material	Infiltration Rate (feet/year)
Stratified Drift	2.0
Till	0.5 - 1.0
Lacustrine Deposits	0.4

(iv) The release-specific dilution factor referred to in clause (i) of this subparagraph, shall be calculated using the following formula, and the value of terms referred to in clause (i) of this subparagraph shall be calculated using the following formula:

$$DF = \left(1 + \left(\frac{Kid}{IL}\right)\right)(1 - F_{adj})$$

Terms	Description	Value	Units
DF	Release-specific dilution factor	substance-specific	unitless

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Terms	Description	Value	Units
K	Hydraulic conductivity of the unconsolidated aquifer underlying the release area	calculated	ft/year
i	Horizontal hydraulic gradient	calculated	ft/ft
d	Aquifer mixing zone default value of 3 feet or a release-specific value calculated using: $d = (0.0112L^2)^{0.5} + d_{\alpha} \left[1 - e^{\left(-\frac{LI}{Kd_{\alpha}} \right)} \right]$	3, or as otherwise calculated	ft
d_{α}	Aquifer thickness	as determined from boring logs	ft
I	Infiltration rate, as identified in section 22a-133k-2(c)(3)(B)(iii)(IV) of the RSRs	calculated	ft/year
L	Length of the release area parallel to the direction of groundwater flow	as measured	ft
F_{adj}	Background concentration for groundwater divided by the groundwater protection criteria for the subject substance or, where the background concentration for groundwater cannot be quantified, one half the laboratory reporting limit for the subject substance divided by the groundwater protection criteria for the subject substance	calculated	unitless

(4) Determining the Presence of NAPL in Soil

For the purpose of this subsection, the presence of NAPL in soil shall be determined using either:

(A) The following equation where the variables in the equation are assigned the values in the Table following this equation:

$$C_{NAP} = (S/2\rho_b)(K_d\rho_b + \theta_w + H'\theta_a)$$

Terms	Description	Units	Value
C_{NAP}	Concentration of an organic substance at which or above which such substance may be present in a non-aqueous phase	mg/kg	calculated
S	Effective solubility	mg/L	substance-specific
ρ_b	Dry soil bulk density	kg/L	1.5 or the lowest value measured at the subject release area

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Terms	Description	Units	Value
K_d	Soil-water partition coefficient, which is calculated using $K_d = K_{OC} * f_{OC}$	L/kg	calculated
K_{OC}	Soil organic carbon-water partition coefficient	L/kg	substance-specific
f_{OC}	Fraction organic carbon of soil	g/g	0.006 or the lowest value measured at the subject release area
θ_w	Water-filled soil porosity L_{water}/L_{soil}	L_{water}/L_{soil}	0.15 for unsaturated soil or 0.43 for saturated soil
θ_a	Air-filled soil porosity L_{air}/L_{soil}	L_{air}/L_{soil}	0.28 for unsaturated soil or 0.0 for saturated soil
H'	Henry's law constant (dimensionless)	unitless	$H \times 41$ where 41 is a conversion factor
H	Henry's law constant	atm-m ³ /mol	substance-specific

(B) The commissioner may approve or deny in writing a request for an alternative to the equation in subparagraph (A) of this subdivision to determine the presence of NAPL in soil. Such proposed alternative methods may be based upon emerging technologies and approaches for which guidance, a standard, or an industrial code has been published by a regulatory agency, governmental advisory group, or other recognized professional organization. A request under this subdivision shall be submitted to the commissioner on a form prescribed by the commissioner in accordance with section 22a-133k-1(g) of the RSRs, and shall also include any other information that the commissioner deems necessary to evaluate such request. Any approval by the commissioner may specify conditions necessary to protect human health and the environment.

(5) Conditional Exemptions to Pollutant Mobility Criteria

(A) Environmentally Isolated Soil

Polluted soil at a release area above the seasonal high water table is not required to be remediated to the pollutant mobility criteria, provided that:

- (i) Such soil does not contain substances that are a continuing source of pollution;
 - (ii) Regardless of groundwater classification, if such soil contains volatile organic substances in excess of GA area pollutant mobility criteria, the concentrations of such substances have been reduced or immobilized to the maximum extent prudent;
 - (iii) An EUR is in effect for the subject area, which restriction shall:
 - (I) Prohibit infiltration of liquid into such soil; and
 - (II) Require compliance with clause (i) and, if applicable, clause (ii) of this subparagraph;
- and

(iv) The EUR specified in clause (iii) of this subparagraph shall also:

(I) Require that any building that renders soil environmentally isolated consists of a roof and structural walls that prevent infiltration of liquid into the soil beneath the building footprint, and prohibit removal of such building; or

(II) Require that the use of a permanent structure that renders soil environmentally isolated and prevents infiltration of liquid into the soil beneath the structure's footprint has been approved in writing by the commissioner and prohibit the removal of such structure.

(B) Polluted Material

(i) Polluted material at a release area is not required to be remediated to the pollutant mobility criteria, provided that:

(I) The pollutant mobility criteria in such polluted material is exceeded solely as a result of the presence of coal ash, wood ash, coal fragments, coal slag, coal clinkers, asphalt paving fragments, or any combination thereof;

(II) Such polluted material is not polluted with any volatile organic substances that exceed the applicable pollutant mobility criteria,

(III) Such polluted material does not exceed the applicable soil vapor volatilization criteria, or if it does, all such polluted material is under a building in accordance with section 22a-133k-3(c)(3) of the RSRs, a permanent structure approved in writing by the commissioner, or an engineered control in compliance with subsection (f)(2)(B) of this section;

(IV) Such polluted material has achieved compliance with the direct exposure criteria in subsection (b) of this section;

(V) Such polluted material is not affecting and will not affect the quality of an existing use of groundwater, including, but not limited to, a potential public water supply resource or an aquifer protection area;

(VI) A public water supply distribution system is available within two hundred (200) feet of the parcel on which polluted material is located and within two hundred (200) feet of all parcels adjacent thereto; and

(VII) The placement of the polluted material used as fill was not prohibited by law at the time of placement.

(ii) This subparagraph shall apply only to polluted materials identified in clause (i) of this subparagraph and releases from such materials. It shall not apply to releases that are not from polluted materials, even if such releases are in the same location as the polluted materials identified in clause (i) of this subparagraph.

(C) Soil Subject to Infiltration

Polluted soil at a release area polluted with substances, other than volatile organic substances, that exceed DEC or PMC is not required to be remediated to the pollutant mobility criteria, provided that at such release area:

(i) Eighty (80) percent or more of the mass of the substances remaining at the release area has been subject to infiltration;

(ii) Infiltration was not obstructed by anthropogenic features, for at least five (5) years;

(iii) Groundwater monitoring complies with the requirements of section 22a-133k-3(h)(1) of the RSRs; and

(iv) The laboratory analytical results for all groundwater sample events collected as

specified in section 22a-133k-3(h)(3) of the RSRs are equal to or less than the following:

(I) For a GA area, an aquifer protection area, or groundwater area used as a source for either a private or public drinking water supply located in a GB area, the groundwater protection criteria and the surface water protection criteria or, if applicable, the water quality criteria; or

(II) For a GB area, other than a GB area specified in subclause (I) of this clause, the surface water protection criteria or, if applicable, the water quality criteria.

(D) Conditional Exemption for Incidental Sources

Soil at a release area polluted with metals, petroleum hydrocarbons, or semi-volatile organic substances is not required to be remediated to the pollutant mobility criteria, provided such pollution is the result of:

(i) An incidental release due to the normal operation of motor vehicles, not including refueling, repair or maintenance of a motor vehicle; or

(ii) Normal paving and maintenance of a consolidated bituminous concrete surface provided such bituminous concrete surface has been maintained for its intended purpose.

(E) Conditional Exemption for Soil Polluted with Pesticides

Soil polluted with pesticides at a release area as a result of the application of pesticides at such release area is not required to be remediated to the pollutant mobility criteria, provided that a determination has been made that such pesticides are present solely as a result of the application of pesticides and:

(i) Compliance with the direct exposure criteria or the requirements in subsection (b)(6) of this section has been achieved; and

(ii) Compliance with the groundwater standards specified in section 22a-133k-3(a) of the RSRs or the requirements of section 22a-133k-3(g) of the RSRs has been achieved.

(6) Pollutant Mobility Criteria for Additional Polluting Substances

(A) Substances at a release area for which pollutant mobility criteria are not specified in Appendix B of the RSRs shall be remediated to background concentration or to criteria obtained pursuant to this subdivision. A request under this subdivision shall be submitted to the commissioner in accordance with section 22a-133k-1(g) of the RSRs, and shall also include:

(i) A proposed risk-based pollutant mobility criteria for each substance calculated in accordance with Appendix G of the RSRs, as applicable to the groundwater classification of the release area;

(ii) A method for determining compliance with each criteria;

(iii) The laboratory reporting limit for each substance; and

(iv) Any information demonstrating whether a proposed criteria will ensure that soil water at such release area does not exceed:

(I) In a GA area, the groundwater protection criteria; or

(II) In a GB area, the groundwater protection criteria multiplied by a dilution factor of ten (10).

(B) The commissioner may approve or deny in writing a request made under subparagraph (A) of this subdivision. No request shall be approved unless it is demonstrated to the commissioner's satisfaction that the requirements of this subdivision have been satisfied and that the proposed pollutant mobility criteria will be protective of human health

and the environment.

(C) Unless prohibited in writing by the commissioner, criteria approved by the commissioner pursuant to subparagraph (A) of this subdivision, may be the subject of a request for alternative criteria under subsection (d)(3)(A) of this subsection.

(d) **Alternative Soil Criteria and Alternative Dilution or Dilution Attenuation Factor**

(1) Information Required in a Request for Approval of Alternative Soil Criteria

A request for approval of the alternative direct exposure criteria or alternative pollutant mobility criteria at a particular release area may be submitted to the commissioner under this subsection. Any such request shall be submitted to the commissioner in accordance with section 22a-133k-1(g) of the RSRs, including any additional information specified in subdivisions (2) or (3) of this subsection, as applicable, and shall also include:

(A) A detailed description of any other release area located on the same parcel as the subject release area and whether such other release area is affected or potentially affected by the subject release area, or is affecting or may potentially affect the subject release area; and

(B) When an EUR is required under this subsection, the acknowledgement and consent of the owner of the subject area to such alternative direct exposure criteria.

(2) Commissioner Approval of Alternative Release-Specific Direct Exposure Criteria

With respect to a substance, except PCBs, for which direct exposure criteria are specified in Appendix A of the RSRs or approved in writing by the commissioner pursuant to subsection (b)(7) of this section, the commissioner may approve or deny in writing a request for an alternative release-specific direct exposure criteria or an alternative method for determining compliance with such criteria.

(A) For substances in soil at a release area, no request shall be approved unless it is demonstrated to the commissioner's satisfaction that:

(i) The application of such alternative direct exposure criteria or method of compliance will protect human health and the environment from the risks associated with direct exposure to polluted soil;

(ii) The concentration of each carcinogenic substance in such soil is equal to or less than a 1×10^{-6} excess lifetime cancer risk level and the concentration of each non-carcinogenic substance in such soil does not exceed a hazard index of 1;

(iii) For a release area polluted with ten (10) or more carcinogenic substances, the cumulative excess lifetime cancer risk for all carcinogenic substances in such soil with the same target organ is equal to or less than 1×10^{-5} ; and

(iv) For a release area polluted with ten (10) or more non-carcinogenic substances, the cumulative hazard index is equal to or less than 1 for non-carcinogenic substances in such soil with the same target organ.

(B) A request for approval of direct exposure criteria or method of compliance shall include a risk assessment prepared in accordance with the most recent EPA Risk Assessment Guidance for Superfund, or other risk assessment method approved by the commissioner.

(C) Any approval of the commissioner under this subdivision may require that an EUR is or will be in effect for the subject area, which restriction shall require compliance with any conditions specified by the commissioner when issuing such approval.

(3) Commissioner Approval of Alternative Release-Specific Pollutant Mobility Criteria

(A) Alternative Release-Specific Pollutant Mobility Criteria

With respect to substances for which pollutant mobility criteria are specified in Appendix B of the RSRs or approved by the commissioner pursuant to subsection (c)(6) of this section, the commissioner may approve or deny in writing a request for an alternative release-specific pollutant mobility criteria or an alternative method for determining compliance with such criteria. No request shall be approved unless it is demonstrated to the commissioner's satisfaction that the application of such alternatives:

- (i) For a substance in soil located in a GA area, will ensure that soil water at such release area is equal to or less than the groundwater protection criteria for such substance; or
- (ii) For a substance in soil located in a GB area, will ensure that the groundwater plume, after dilution resulting from infiltration on the parcel, is equal to or less than the groundwater protection criteria for such substance.

(B) Alternative Release-Specific Dilution or Dilution Attenuation Factor

With respect to substances for which pollutant mobility criteria are specified in Appendix B of the RSRs or approved by the commissioner pursuant to subsection (c)(6) of this section, the commissioner may approve or deny in writing a request for an alternative release-specific dilution or dilution attenuation factor. No request shall be approved unless it is demonstrated to the commissioner's satisfaction that the application of such dilution attenuation factor:

- (i) For a substance in soil located in a GA area, will ensure that the release area will not degrade groundwater quality and thereby prevent the achievement of the groundwater criteria or background concentration, in accordance with section 22a-133k-3 of the RSRs; or
- (ii) For a substance in soil located in a GB area, will ensure that the soil water at the release area will not cause the groundwater at the nearest downgradient parcel boundary to exceed the groundwater protection criteria for each substance.

(C) Condition for Approval

For any request for approval of alternative pollutant mobility criteria or alternative dilution or dilution attenuation factor specified in this subdivision, alternative groundwater criteria shall not be used for the same substance for which alternative soil criteria is requested.

(4) LEP Calculation and Use of Alternative Release-Specific Pollutant Mobility Criteria

With respect to substances for which pollutant mobility criteria are specified in Appendix B of the RSRs, alternative release-specific pollutant mobility criteria for a particular release area may be calculated by an LEP in accordance with Appendix H of the RSRs and used at a release area, provided that:

- (A) The calculated alternative pollutant mobility criteria shall not exceed one thousand (1,000) mg/kg in a GA area or ten thousand (10,000) mg/kg in a GB area;
- (B) All representative laboratory analytical results of groundwater samples used to determine compliance with any such alternative criteria shall be conducted in accordance with section 22a-133k-3(h) of the RSRs. Alternative criteria under this subdivision shall not be used if any groundwater sample results are equal to or greater than:

- (i) The groundwater protection criteria in Appendix C of the RSRs, if the subject release area is in a GA area, an aquifer protection area, or an area where groundwater is used as a

source of either private or public drinking water supply;

(ii) Either the surface water protection criteria in Appendix D of the RSRs or, if required under section 22a-133k-3(a)(3) of the RSRs, the water quality criteria; and

(iii) The volatilization criteria in Appendix E of the RSRs; and

(C) Notice of the use and derivation of the calculated criteria is submitted to the commissioner in accordance with section 22a-133k-1(g) of the RSRs.

(e) Determining Compliance with the Soil Criteria

(1) Direct Exposure Criteria

Unless an alternative method for determining compliance with direct exposure criteria has been approved in writing by the commissioner pursuant to subsection (d)(2) of this section, compliance with direct exposure criteria for each substance is achieved when either:

(A) All laboratory analytical results of soil samples from a release area are equal to or less than the applicable direct exposure criteria; or

(B) Except for PCBs, the ninety-five (95) percent upper confidence level of the arithmetic mean of a statistically representative sampling data set of all laboratory analytical results for such substance from a release area, consisting of ten (10) or more soil samples, is equal to or less than the applicable direct exposure criteria.

(2) Pollutant Mobility Criteria

Unless an alternative method for determining compliance with pollutant mobility criteria has been approved in writing by the commissioner pursuant to subsection (d)(3) of this section, compliance with pollutant mobility criteria for each substance is achieved when either:

(A) All laboratory analytical results of soil samples from a release area are equal to or less than the applicable pollutant mobility criteria; or

(B) Except for PCBs, the ninety-five (95) percent upper confidence level of the arithmetic mean of a statistically representative sampling data set of all laboratory analytical results for such substance from a release area, consisting of ten (10) or more soil samples that are located above the water table, is equal to or less than the applicable pollutant mobility criteria.

(3) Background Concentration

Compliance when remediating to the background concentration for a given substance in soil is achieved when:

(A) A representative sampling program is used to characterize the background concentration for soil that is:

(i) Of similar texture and composition;

(ii) Collected from the nearest location practicable outside the subject release area, as demonstrated to the satisfaction of the commissioner; and

(iii) Not affected by another discrete release of the same substance, or having an effect on the concentrations of the same substance for which a background concentration is determined; and either

(B) All laboratory analytical results of soil samples from the subject release area are equal to or less than the background concentration for soil; or

(C) A statistical comparison of the background concentrations in soil to the concentrations of substances in soil from the subject release area, results in a statistically

significant similarity.

(f) Soil Criteria Variances

(1) Widespread Polluted Fill Variance

(A) Eligibility

Geographically-extensive polluted fill present at a parcel may be eligible for a variance from compliance with the pollutant mobility criteria in accordance with subparagraph (B) or (C) of this subdivision, provided that:

(i) The fill for which a variance is sought does not contain volatile organic substances in excess of pollutant mobility criteria;

(ii) Such fill is not affecting and will not affect the quality of an existing or potential public water supply resource or an existing private drinking water supply;

(iii) For each substance in such fill, compliance with the direct exposure criteria in subsection (b) of this section has been achieved;

(iv) Any substances released into such fill subsequent to the placement of such fill that exceed the pollutant mobility criteria shall be remediated to concentrations equal to or less than the concentrations of those substances already within such fill;

(v) The placement of such fill was not prohibited by law at the time of placement;

(vi) Such fill shall remain on the parcel within the area for which such variance has been certified by an LEP in accordance with subparagraph (B) of this subdivision or approved in writing by the commissioner in accordance with subparagraph (C) of this subdivision; and

(vii) The owner of the parcel for which a variance is sought acknowledges and consents to such variance and the EUR required by subparagraph (D) of this subdivision.

(B) LEP Certification of a Widespread Polluted Fill Variance

A variance for widespread polluted fill in accordance with this subdivision may be certified in writing by an LEP, provided such LEP determines that a parcel complies with the eligibility requirements in subparagraph (A) of this subdivision and the LEP demonstrates that the following requirements have been satisfied:

(i) Such fill extends over an area larger than ten (10) acres;

(ii) Such fill is located within the coastal boundary, as defined in section 22a-94(b) of the Connecticut General Statutes;

(iii) Such fill is located within a GB area;

(iv) Such fill is not located within the drainage basin of a Class A stream, as identified in the Water Quality Standards;

(v) Compliance with the groundwater standards in section 22a-133k-3 of the RSRs has been achieved for each substance in groundwater;

(vi) Such fill is not hazardous waste, as defined in section 22a-448 of the Connecticut General Statutes;

(vii) Except in the case of a municipality or state or federal agency, the person requesting the variance or the owner of the parcel subject to the variance did not place the fill on the subject parcel and is not affiliated with any person responsible for such placement through any direct or indirect familial relationship or any contractual, corporate, or financial relationship other than that by which such person's or such owner's interest in such parcel was conveyed or financed; and

(viii) Notice of the use of such variance shall be submitted to the commissioner in

accordance with section 22a-133k-1(g) of the RSRs.

(C) Commissioner Approval of a Widespread Polluted Fill Variance

The commissioner may approve or deny in writing a request for a variance under this subsection. No request shall be approved unless such request demonstrates to the commissioner's satisfaction the eligibility requirements in subparagraph (A) of this subdivision and the requirements of this subparagraph have been satisfied. A request for such variance shall be submitted to the commissioner in accordance with section 22a-133k-1(g) of the RSRs, and shall also include:

(i) Information demonstrating that a public water supply distribution system is available to all areas between the groundwater plume and the downgradient surface water discharge area;

(ii) The comparable cost of achieving compliance with pollutant mobility criteria without such variance;

(iii) The degree to which such fill exceeds pollutant mobility criteria;

(iv) The extent of such fill on the subject parcel that extends below the water table;

(v) The three-dimensional extent of such fill and the percentage of such fill occurring on the subject parcel; and

(vi) Information demonstrating that the person requesting the variance or the owner of the parcel subject to the variance did not place such fill on the subject parcel or is not affiliated with any person responsible for the placement of such fill through any direct or indirect familial relationship or any contractual, corporate or financial relationship other than that by which such person's or such owner's interest in such parcel is to be conveyed or financed.

(D) Actions Required for Maintaining a Widespread Polluted Fill Variance

(i) No later than one hundred and eighty (180) days after an LEP certifies a widespread polluted fill variance under subdivision (1)(B) of this subsection, an EUR that complies with the requirements of this subsection and the EUR regulations shall be in effect for the subject area, which restriction shall prohibit any movement or reuse of such fill in a manner that does not comply with the RSRs; or

(ii) No later than one hundred and eighty (180) days after a widespread polluted fill variance has been certified by an LEP or approved by the commissioner, a request for an ELUR or NAUL that complies with the requirements of this subsection and the EUR regulations shall be submitted to the commissioner. The EUR in effect for the subject area, shall:

(iii) Prohibit any movement or reuse of such fill in a manner that does not comply with the RSRs; and

(iv) Require compliance with any condition imposed by the commissioner when approving a variance under this section.

(2) Engineered Control Variance

(A) Eligibility

A release area may be eligible for a variance from compliance with the direct exposure criteria, the pollutant mobility criteria, or both, under this subdivision through the use of an engineered control, provided that:

(i) The commissioner authorized the disposal of solid waste or polluted soil at the subject

release area;

(ii) The soil at such release area is polluted with a substance for which remediation is technically impracticable;

(iii) The commissioner has determined that the removal of such substance or substances from such release area would create an unacceptable risk to human health;

(iv) An LEP, pursuant to subparagraph (B) of this subdivision, has determined that the cost of remediating the polluted soil at the subject release area is significantly greater than the cost of installing and maintaining an engineered control for such soil and conducting groundwater monitoring that complies with section 22a-133k-3(h) of the RSRs at the subject release area; or

(v) The commissioner, pursuant to subparagraph (C) of this subdivision, has determined that the cost of remediating the polluted soil at the subject release area significantly outweighs the risk to the environment and human health if the engineered control fails, causing the mobilization of a substance in the soil or human exposure to such substance, and the cost of remediating the polluted soil at the subject release area is significantly greater than the cost of installing and maintaining an engineered control for such soil and conducting groundwater monitoring that complies with section 22a-133k-3(h) of the RSRs at the subject release area.

(B) LEP Certification of an Engineered Control Variance

A variance from compliance with the direct exposure criteria may be available when an engineered control is used at a release area, provided an LEP certifies to the commissioner, in accordance with section 22a-133k-1(g) of the RSRs, that the eligibility requirements of subparagraph (A) of this subdivision and the following requirements have been satisfied:

(i) The engineered control is designed and constructed and will be maintained to meet the following specifications, as applicable:

(I) For non-paved surfaces consisting of shallow-rooted vegetation, mulch, or gravel, there shall be a minimum of one (1) foot of material as measured from the ground surface, provided that the concentrations of any substances in such material are equal to or less than the applicable direct exposure criteria. Such material shall be underlain by a demarcation layer, unless there is a pre-existing mature lawn for a minimum of three (3) years;

(II) For non-paved surfaces consisting of shrubbery, such shrubbery shall be underlain by a minimum of eighteen (18) inches of material as measured from the ground surface, provided that the concentrations of any substances in such material are equal to or less than the applicable direct exposure criteria. Such material shall be underlain by a demarcation layer, unless there is pre-existing mature shrubbery;

(III) For non-paved surfaces consisting of trees, such trees shall be underlain by a minimum eighteen (18) inches of material, provided that the concentrations of any substances in such material are equal to or less than the applicable direct exposure criteria, measured vertically from the ground surface and extending horizontally to a radius equivalent to the full extent of the tree crown when mature. Such material shall be underlain by a demarcation layer, unless there are pre-existing trees;

(IV) For non-paved surfaces consisting of hardscape, a professional engineer shall sign and seal a plan and specifications indicating that the hardscape is appropriately designed to work for its intended use, with minimal maintenance and repair for fifteen (15) years, and

is or shall be constructed with a minimum of nine (9) inches of a combined thickness of hardscape and sub-base. Such material shall be underlain by a demarcation layer, unless such hardscape is pre-existing;

(V) For paved surfaces, a professional engineer shall sign and seal a plan and specifications indicating that the engineered control is appropriately designed for such paved surface's intended use, with minimal maintenance and repair for fifteen (15) years, and shall be constructed with a minimum of two and one-half (2.5) inches of bituminous concrete with a minimum of six (6) inches of sub-base or a minimum of four (4) inches of reinforced concrete. In addition any bituminous concrete or reinforced concrete less than five (5) feet wide or less than five hundred (500) square feet, the surface shall be underlain by a demarcation layer, unless such paved surface is pre-existing; or

(VI) For a ground-mounted solar array anchored by a concrete ballast, the concrete ballast for the solar array shall be underlain with a minimum of one (1) foot of material and all remaining infrastructure associated with the solar array installation shall consist of a minimum of two (2) feet of material, provided that any substances in such are equal to or less than the applicable direct exposure criteria and all such material is underlain by a demarcation layer;

(ii) PCBs are not present in the soil in excess of the residential direct exposure criteria;

(iii) Consolidation of polluted soil under an engineered control is such that the soil does not exceed four (4) feet above the pre-consolidation elevation;

(iv) Measures are in place to ensure that the structural integrity, function, and effectiveness of the engineered control will be maintained. Such measures shall include, without limitation:

(I) Measures to prevent storm run-on or run-off from damaging the engineered control;

(II) Inspection of the engineered control conducted semi-annually. Such inspections may be done in conjunction with and satisfy the inspection requirements in the EUR Regulations; and

(III) Repairs to correct the effects of settling, subsidence, erosion, or other damaging events or conditions no later than sixty (60) days following identification of damage to the engineered control, provided if weather prevents repairs from being made within sixty (60) days of the identification of damage, as long as temporary repairs or measures have been taken, repairs can be made as soon as the weather permits;

(v) The owner of the subject area on which such engineered control will be placed acknowledges and consents to such engineered control;

(vi) An EUR is or will be in effect for the subject area, which restriction shall:

(I) Prohibit the disturbance of the engineered control and the polluted soil; and

(II) Require compliance with the requirements of this subparagraph, except for clauses (vii) and (viii);

(vii) A copy of the required public notice that was posted in accordance with section 22a-133k-1(d) of the RSRs; and

(viii) Calculation of the required financial assurance in accordance with section 22a-133k-1(f) of the RSRs.

(C) Commissioner Approval of an Engineered Control Variance

The commissioner may approve or deny in writing a request for a variance under this

subsection. No request shall be approved unless such request demonstrates to the commissioner's satisfaction that the eligibility requirements in subparagraph (A) of this subdivision and the requirements of this subparagraph have been met. A request for the commissioner's approval of an engineered control variance shall be submitted in accordance with section 22a-133k-1(g) of the RSRs. Any such request shall include a demonstration of compliance with the eligibility requirements of subparagraph (A) of this subdivision and include a detailed written report and plan which demonstrate that:

(i) Such engineered control is supported by specifications that are signed and sealed by a professional engineer and indicate that such engineered control will function with minimum maintenance, will promote drainage and minimize erosion of or other damage to such control, and will accommodate settling and subsidence of the underlying soil so as to maintain the control's functional integrity;

(ii) Measures are in place to ensure that the structural integrity, function, and effectiveness of the engineered control will be maintained. Such measures shall include, without limitation:

(I) Measures that ensure the continued effectiveness of the engineered control;

(II) Measures to prevent storm run-on or run-off from damaging the engineered control;

(III) Inspections, on a schedule approved by the commissioner. Such inspections may be done in conjunction with and satisfy the inspection requirements in the EUR Regulations; and

(IV) Repairs to correct the effects of any settling, subsidence, erosion or other damaging events or conditions no later than sixty (60) days following identification of damage to the engineered control, provided if weather prevents repairs from being made within sixty (60) days of the identification of damage, as long as temporary repairs or measures have been taken, repairs can be made as soon as the weather permits;

(iii) An EUR is or will be in effect for the subject area, which restriction shall:

(I) Prohibit any activity that could disturb either the engineered control or the polluted soil; and

(II) Except for clauses (iv) and (v) of this subparagraph, require compliance with the requirements of this subparagraph and with all conditions imposed by the commissioner when approving such variance under this subdivision;

(iv) A copy of the required public notice that was posted in accordance with section 22a-133k-1(d) of the RSRs;

(v) Calculation of the required financial assurance in accordance with section 22a-133k-1(f) of the RSRs;

(vi) The owner of the subject area on which such engineered control will be placed acknowledges and consents to such engineered control; and

(vii) In addition to clauses (i) to (vi), inclusive of this subparagraph:

(I) For a variance from direct exposure criteria, such engineered control shall be designed, constructed, and will be maintained, to physically isolate polluted soil from human contact with such soil;

(II) For a variance from pollutant mobility criteria, such engineered control shall be designed, constructed, and will be maintained, to minimize migration of liquids through polluted soil and reduce the permeability of such soil to a permeability of less than 10^{-6}

cm/sec and groundwater monitoring at the release area shall be adequate to ensure that any substance migrating from the release area will be detected. In addition, if a variance under this subclause includes volatile organic substances, such engineered control shall be designed, constructed, and will be maintained, to ensure that any soil vapor migrating from the subject release area complies with all applicable volatilization criteria in accordance with section 22a-133k-3(c)(3) of the RSRs;

(III) For an engineered control that includes immobilization, including, but not limited to, the immobilization of NAPL, such engineered control shall be designed, constructed, and will be maintained, to reduce the migration of contaminants from the subject area, achieve compliance with groundwater criteria, and reduce the permeability of such soil to a permeability of less than 10^{-6} cm/sec or if permeability is reduced by immobilization that such permeability of impacted soil is approved in writing by the commissioner and at a minimum is adequate to immobilize contaminants in the soil to achieve compliance with applicable groundwater criteria; and

(IV) For an engineered control using paved surfaces or hardscape, the engineered control is based on specifications which demonstrate that the surface and sub-base materials are suitable for the intended use and are able to function with minimal maintenance and repair for fifteen (15) years and which specifications are signed and sealed by a professional engineer.

(D) Actions Required for Maintaining an Engineered Control Variance

After an engineered control has been certified by an LEP or approved by the commissioner pursuant to this subdivision, the following actions shall be taken within the timeframes prescribed:

(i) A Final Engineered Control Completion Statement shall be submitted to the commissioner in accordance with section 22a-133k-1(g) of the RSRs, within one hundred and twenty (120) days from completion of construction of the engineered control. Such statement shall be accompanied by as-built drawings, signed and sealed by a professional engineer, and certified by an LEP to demonstrate that the engineered control complies with the requirements of this subdivision;

(ii) A financial assurance mechanism shall be established within one hundred and twenty (120) days of completion of construction of the engineered control. Such financial assurance shall comply with the requirements of section 22a-133k-1(f) of the RSRs; and

(iii) A request for an EUR that complies with the requirements of this subsection and the EUR regulations shall be certified by an LEP or submitted to the commissioner, as applicable within one hundred and eighty (180) days of completion of construction of the engineered control.

(E) If the commissioner approves a request for an engineered control variance, under this subdivision, any such approval may include any additional measures which the commissioner deems appropriate to protect human health and the environment. Nothing in this subdivision shall preclude the commissioner from taking any action the commissioner deems necessary to protect human health or the environment if an approved engineered control fails.

(3) Public Roadways Variance

(A) The commissioner may grant a variance from compliance with the direct exposure

criteria, the pollutant mobility criteria, or both, for polluted soil at a release area beneath an existing public roadway. Such variance, if approved, shall apply only so long as such polluted soil is beneath the public roadway. A request for such a variance shall be submitted to the commissioner in accordance with section 22a-133k-1(g) of the RSRs. Any such request shall also include a statement, in writing, from the entity that owns the public roadway, in which such entity acknowledges:

(i) Such entity's understanding of and consent to the variance requested under this subdivision;

(ii) That the polluted soil under and within the public roadway remains subject to the RSRs, including, but not limited to, any conditions imposed by the commissioner when approving a variance under this subdivision; and

(iii) That if, at some future time, such public roadway is proposed to be removed, at least ninety (90) days before such public roadway is removed, notice of such removal shall be provided to the commissioner along with a proposed plan for the commissioner's review and approval of the investigation and remediation of all polluted soil for which a variance was obtained under this subdivision.

(B) Polluted soil at a release area is not eligible for a variance under this subdivision unless such soil is beneath an existing roadway.

(C) The commissioner may approve or deny in writing a request for a variance under this subdivision. No request shall be approved unless such request demonstrates to the commissioner's satisfaction that:

(i) The requirements of subparagraph (A) of this subdivision have been satisfied;

(ii) Removal of the polluted soil is neither feasible nor prudent; and

(iii) The granting of the variance will not endanger public health or the environment.

(D) The approval or any variance by the commissioner under this subdivision may include any conditions that the commissioner deems necessary to protect human health and the environment.

(g) Non-aqueous Phase Liquids

(1) NAPL shall be removed to the maximum extent practicable.

(2) The commissioner may approve or deny in writing a request for a variance from the requirement to remove NAPL to the maximum extent practicable in accordance with this subsection. No request shall be approved unless such request demonstrates to the commissioner's satisfaction that the requirements of subdivision (3) of this subsection have been satisfied. A request for the approval under this subsection shall be submitted to the commissioner in accordance with section 22a-133k-1(g) of the RSRs and shall include the acknowledgement and consent of all owners of the release area containing NAPL.

(3) A release area containing NAPL is eligible for a variance under this subsection only if:

(A) All NAPL for which a variance is sought has been contained or removed to the maximum extent prudent such that:

(i) There is no migration of such NAPL;

(ii) In the circumstance where NAPL contains PCBs, such PCBs shall be remediated in compliance with 40 CFR Part 761;

(iii) Compliance with applicable groundwater criteria for groundwater impacted by such

NAPL has been achieved;

(iv) Where the NAPL contains volatile organic substances located at or above the seasonal low water table and is beneath a building without mitigation in accordance with section 22a-133k-3(c)(3) of the RSRs, compliance with volatilization criteria for soil vapor in accordance with section 22a-133k-3(c)(2) of the RSRs has been achieved; and

(B) An ELUR is or will be in effect for the subject area, which restriction shall:

(i) Except for ongoing remediation, prohibit the disturbance and exposure of NAPL;

(ii) Prohibit the construction of a building over such NAPL if there is NAPL containing volatile organic substances located at or above the seasonal low water table; and

(iii) Require compliance with subparagraph (A) of this subdivision.

(4) The requirements of this subsection shall not apply to NAPL subject to regulation under section 22a-449(d)-101 et seq. of the Regulations of Connecticut State Agencies. Any such NAPL shall remain subject to regulation under section 22a-449(d)-101 et seq. of the Regulations of Connecticut State Agencies.

(h) Use of Polluted Soil and Reuse of Treated Soil

Any soil excavated from or treated at a release area during remediation shall be managed as follows:

(1) Hazardous Waste

Treatment, storage, disposal and transportation of soil which is hazardous waste, as defined pursuant to section 22a-448 of the Connecticut General Statutes, shall be carried out in conformance with the provisions of sections 22a-449(c)-101 to 119, inclusive, of the Regulations of Connecticut State Agencies, and any other applicable law;

(2) Special Waste

In accordance with section 22a-209-8 of the Regulations of Connecticut State Agencies, the commissioner may authorize polluted soil, which is not hazardous waste, as defined in section 22a-448 of the Connecticut General Statutes, to be disposed of as special wastes, as defined in section 22a-209-1 of the Regulations of Connecticut State Agencies.

(3) Polluted Soil

To be reused in any manner, polluted soil shall comply with all requirements of the RSRs, shall not be placed below the water table, shall not be placed in an area subject to erosion, and shall comply with the requirements in subparagraph (A), (B) or (C) of this subdivision. Prior to the reuse of such soil, a notice or request for the reuse of such soil pursuant to subparagraph (A), (B) or (C) of this subdivision shall be submitted to the commissioner in accordance with section 22a-133k-1(g) of the RSRs. Any such notice or request shall also include a map showing the proposed location and depth of the placement of such soil, and shall also demonstrate compliance with subparagraph (A), (B), or (C) of this subdivision. The commissioner may approve or deny in writing any request submitted pursuant to subparagraph (B) or (C) of this subdivision. No request shall be approved unless such request demonstrates to the commissioner's satisfaction, compliance with the requirements of subparagraph (B) or (C) of this subdivision, as applicable, and that the proposed reuse of soil is protective of human health and the environment.

(A) Polluted soil from a release area may be reused on the same parcel from which it was excavated by providing notice to the commissioner only if the following requirements are met:

(i) (I) If the soil to be reused is polluted with substances at concentrations that are all equal to or less than the applicable direct exposure criteria in Appendix A of the RSRs or criteria otherwise approved by the commissioner pursuant to subsection (b)(7) of this section and the applicable pollutant mobility criteria in Appendix B of the RSRs or criteria otherwise approved by the commissioner pursuant to subsection (c)(6) of this section, such soil may be reused at any location on such parcel; or

(II) If the concentration of any substance in such soil exceeds the GA area pollutant mobility criteria in Appendix B of the RSRs or criteria otherwise approved by the commissioner pursuant to subsection (c)(6) of this section, such soil may be reused only in a GB area and placed over soil and groundwater that has already been affected by a release; and

(ii) Any soil to be reused is not placed under a building, if the polluted soil contains volatile organic substances, other than volatile petroleum substances; and

(iii) Any soil to be reused does not contain PCBs.

(B) Polluted soil from a release area may be reused on the same parcel from which it was excavated, on a different parcel affected by the same release, or on an abutting parcel affected by a release of similar substances, only in the following circumstances:

(i) (I) If the polluted soil exceeds the direct exposure criteria or the pollutant mobility criteria applicable to the location on the parcel where the polluted soil will be reused or relocated, such polluted soil shall be rendered inaccessible pursuant to subsection (b)(3) of this section, environmentally isolated pursuant to subsection (c)(5)(A) of this section, or is subject to an engineered control pursuant to subsection (f)(2) of this section;

(II) If the polluted soil contains volatile organic substances, other than volatile petroleum substances, that are greater than the GA area pollutant mobility criteria in Appendix B of the RSRs or criteria otherwise approved by the commissioner pursuant to subsection (c)(6) of this section, or if such polluted soil is placed under a building that overlies a release area that has already been affected by a release of volatile organic substances, the requirements of section 22a-133k-3(c)(3) of the RSRs shall apply; or

(III) If the polluted soil contains PCBs, the commissioner has issued a written approval in accordance with section 22a-467 of the Connecticut General Statutes and subsection (f)(2) of this section; and

(ii) Prior to any reuse on an abutting parcel affected by the same release, or on a different parcel affected by a release of similar substances, written approval from the commissioner is required.

(C) Polluted soil from a release area may be reused on a parcel other than the parcel for which the polluted soil was excavated, only if prior to any reuse, the commissioner approves such reuse in writing and such soil to be reused:

(i) Is polluted with substances at concentrations equal to or less than the applicable direct exposure criteria in Appendix A of the RSRs or criteria otherwise approved by the commissioner pursuant to subsection (b)(7) of this section and the applicable pollutant mobility criteria in Appendix B of the RSRs or criteria otherwise approved by the commissioner pursuant to subsection (c)(6) of this section for the location on the parcel where the polluted soil will be relocated;

(ii) Is placed over soil and groundwater which has already been affected by a release of

similar substances; and

(iii) Either:

(I) The cumulative depth of all reused polluted soil from all other parcels does not exceed four (4) feet above the pre-remedial grade; or

(II) The cumulative depth of all reused polluted soil from all other parcels does not exceed ten (10) feet, provided that a demonstration has been made to the commissioner's satisfaction that the depth greater than four (4) feet is required for redevelopment purposes and all slopes are designed, created, and will be maintained to prevent erosion.

(4) Natural Soil

Polluted soil may be used at any parcel of land if:

(A) Any substance is present therein in concentrations not exceeding naturally-occurring conditions in soil at the release area from which such soil is removed; and

(B) No other substance is detectable in such soil at a concentration greater than its laboratory reporting limit.

(5) Polluted Soil Containing Pesticides

Notwithstanding the provisions of subdivision (3) of this subsection, the commissioner may approve or deny in writing a request for agricultural reuse of soil containing pesticides excavated on one parcel for reuse on another parcel. Any request regarding the reuse of soil under this subdivision shall be made to the commissioner in accordance with section 22a-133k-1(g) of the RSRs and, if soil is being reused on a parcel different from the parcel from which it was excavated, shall include the acknowledgement and consent of the owner of the parcel receiving such soil. No reuse shall be approved under this subdivision unless the request for reuse demonstrates to the commissioner's satisfaction that:

(A) The concentration of substances in soil to be reused is equal to or less than the direct exposure criteria and the pollutant mobility criteria for all substances, other than pesticides;

(B) Such soil to be reused is excavated only from the soil horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral matter from which plants receive the most nutrients;

(C) Such soil is reused only at current agricultural properties;

(D) The pesticides in the soil to be reused are the result of the application of pesticides in accordance with accepted practices at the time of application; and

(E) Such reuse is protective of human health and the environment.

(i) **Additional Remediation of Polluted Soil**

Nothing in the RSRs shall preclude the commissioner from taking any action necessary to prevent or abate pollution or to prevent or abate any threat to human health or the environment, including without limitation:

(1) Ecological Risk Assessment and Remediation

At any location at which, despite remediation in accordance with the RSRs, the commissioner determines that there is a potential ecological risk, the commissioner may require that an ecological risk assessment be conducted and that additional remediation be conducted to mitigate any risks identified in such assessment;

(2) Aquatic Life Assessment and Remediation

At any location at which polluted soil has eroded into a surface water body, the commissioner may require that the effect of such polluted soil on aquatic life be assessed

and that remediation to protect or restore aquatic life and surface water quality from the effects of such polluted soil be undertaken; or

(3) Multiple Polluting Substances

At any location at which there is polluted soil containing multiple polluting substances, the commissioner may require additional remediation to ensure that the risk posed by such substances does not exceed:

(A) A cumulative excess lifetime cancer risk of 10^{-5} for ten (10) or more carcinogenic substances with the same target organ; and

(B) A cumulative hazard index of 1 for non-carcinogenic substances with the same target organ.

(Effective January 30, 1996; Amended June 27, 2013; Amended February 16, 2021)