

1                   **SUBCHAPTER 02S – RULES AND CRITERIA FOR THE ADMINISTRATION OF THE DRY-**  
2   **CLEANING SOLVENT CLEANUP FUND**  
3                   **SECTION .0100 – GENERAL CONSIDERATIONS**  
4

5                   **15A NCAC 02S .0101 SCOPE AND PURPOSE**

6                   The purpose of this Subchapter is to establish the criteria for determining eligibility for certification into the North  
7                   Carolina Dry-Cleaning Solvent Cleanup Fund program, minimum management practices, a risk-based approach for  
8                   assessment and remediation of certified facilities, and the criteria for the disbursement of funds from the North  
9                   Carolina Dry-Cleaning Solvent Cleanup Fund.

10                  *History Note: Authority G.S. 143-215.104D(b); 143-215.104F; 143-215.104N; ~~150B-21.2~~;*

11                                   *Eff. August 1, 2000;*

12                                   *Amended Eff. September 1, 2007.*

13  
14                  **15A NCAC 02S .0102 DEFINITIONS**

15                  The definition of any word or phrase used in this Subchapter shall be the same as given in G.S. 143-215.104B and  
16                  the following words and phrases shall have the following meanings:

- 17                   (1) "Act" means the Dry-Cleaning Solvent Cleanup Act of 1997, 1997 ~~and any amendments thereto.~~
- 18                   (2) "Apparel and household fabrics" means apparel and fabrics that have been purchased at retail or have  
19                                   been purchased at wholesale for rental at retail.
- 20                   (3) "Business" means "business" as defined in G.S. 59-102.
- 21                   (4) "Chemicals of concern" means the specific compounds and their breakdown products that are identified  
22                                   for evaluation in the risk-based corrective action process. Identification ~~may~~ can be based on their  
23                                   historical and current use at the site, detected concentrations in environmental media, ~~media~~ and  
24                                   their mobility, toxicity, and persistence in the environment.
- 25                   (5) "Closed container solvent transfer system" means a device or system ~~specifically~~ designed to fill a dry-  
26                                   cleaning machine with dry-cleaning solvent through a mechanical valve or sealed coupling in  
27                                   order to prevent spills or other loss of solvent liquids or vapors to the environment.
- 28                   (6) "Complete exposure pathway" means an exposure pathway where a chemical of concern has reached a  
29                                   receptor.
- 30                   (7) "Contaminated site" or "site" means the area defined by the ~~likely~~ current and future location of the  
31                                   chemicals of concern from a facility or abandoned site. A contaminated site ~~may~~ could be an  
32                                   entire property or facility, a defined area or portion of a facility or property, ~~property~~ or multiple  
33                                   facilities or properties.
- 34                   (8) "Discovery Site" means the physical site or area where dry-cleaning solvent contamination has been  
35                                   discovered. A discovery site may or may not be the same property as the facility site.
- 36                   (9) "Division" means the Division of Waste Management of the Department of Environment and Natural  
37                                   Resources Environmental Quality.

- 1 (10) "Dry-Cleaning Business" means a business having engaged in dry-cleaning operations or the operation  
2 of a wholesale distribution facility at a facility site.
- 3 (11) "Environmental media" means soil, sediment, surface water, groundwater, air, ~~air~~ or other physical  
4 substance.
- 5 (12) "Engineering controls" means physical modifications to a site to reduce or eliminate the potential for  
6 exposure to chemicals of concern.
- 7 (13) "Exposure pathway" means the course that a chemical of concern takes or may take from a source area  
8 to a receptor. Each exposure pathway includes a source or release from a source of a chemical of  
9 concern, a potential point of exposure, an exposure route, ~~route~~ and the potential receptor.
- 10 (14) "Facility site" means the physical location of a dry-cleaning facility, a wholesale distribution facility,  
11 ~~facility~~ or an abandoned site.
- 12 (15) "Hazard Index" means the sum of two or more hazard quotients for chemicals of concern or multiple  
13 exposure pathways to a particular receptor.
- 14 (16) "Hazard quotient" means the ratio of level of exposure of a chemical of concern over a specified time  
15 period to a reference dose for that chemical of concern derived for a similar exposure period.
- 16 (17) "Individual excess lifetime cancer risk" means the increase over background in an individual's  
17 probability of getting cancer over a lifetime due to exposure to a chemical.
- 18 (18) "Institutional controls" means nonengineered measures, including land-use restrictions, used to prevent  
19 unsafe exposure to contamination.
- 20 (19) "Material impervious to dry-cleaning solvent" means a material that has been certified by the  
21 manufacturer or an independent testing laboratory ~~such as Underwriters Laboratory~~, to maintain  
22 its chemical and structural integrity in the presence of the applicable dry-cleaning solvent and  
23 prevent the movement of dry-cleaning solvent for a period of a least 72 hours.
- 24 (20) "Monitored natural attenuation" means an approach to the reduction in the concentration of chemicals  
25 of concern in environmental media due to naturally occurring physical, chemical and biological  
26 processes, ~~processes, which is based on best available scientific information~~.
- 27 (21) "Non-residential land use" means a use that is not a residential land use.
- 28 (22) "Number of full time employees" means the number of full-time equivalent employees employed by a  
29 person who owns a dry-cleaning facility, as calculated pursuant to 15A NCAC 02S .0103.
- 30 (23) "Person" means "person" as defined in G.S. 143-215.77(13).
- 31 (24) "Petitioner" means a potentially responsible party who submits a petition for certification of a facility  
32 site.
- 33 (25) "Point of demonstration" means the location selected between the source area and a point of exposure  
34 where levels of chemicals of concern are measured to ensure that site-specific target levels are  
35 being met.
- 36 (26) "Point of exposure" means the location at which an individual or population may come in contact with  
37 a chemical of concern originating from a site.

- 1 (27) "Receptor" means any human, plant, or animal ~~that which~~ is, or has the potential to be, adversely  
2 affected by the release or migration of chemicals of concern.
- 3 (28) "Reference dose" means a toxicity value for evaluating potential non-carcinogenic effects in humans  
4 resulting from exposure to a chemical of concern.
- 5 (29) "Remedial action plan" means a plan that outlines activities to be undertaken to clean up a  
6 contaminated site and to reduce or eliminate current or potential exposures to receptors.
- 7 (30) "Representative concentrations" means a typical or average concentration to which the receptor is  
8 exposed over the specified exposure duration, within a specified geographical area, and for a  
9 specific route of exposure.
- 10 (31) "Residential land use" means use for human habitation, including dwellings such as single family  
11 houses and multi-family apartments, children's homes, nursing homes, and residential portions of  
12 government-owned lands (local, State ~~state~~ or federal). Because of the similarity of exposure  
13 potential and the sensitive nature of the potentially exposed human population, use for day care  
14 facilities, educational facilities, hospitals, and parks (local, State ~~state~~ or federal) shall be  
15 considered residential land use for the purpose of land use classification.
- 16 (32) "Risk-based screening level" means chemical-specific, risk-based values for chemicals of concern that  
17 shall be ~~are~~ protective of human health. The risk-based screening levels are as follows:
- 18 (a) For known or suspected carcinogens, except for those chemicals of concern that have  
19 groundwater standards or interim standards established in 15A NCAC 02L, risk-based  
20 screening levels shall be ~~are~~ established for each chemical of concern at exposures that  
21 represent an individual excess lifetime cancer risk of one in 1,000,000.
- 22 (b) For systemic toxicants, except for those chemicals of concern that have groundwater standards  
23 or interim standards established in 15A NCAC 02L, risk-based screening levels shall be  
24 ~~are~~ established using a hazard quotient for each chemical of concern of 0.2.
- 25 (c) For chemicals of concern in groundwater that have 15A NCAC 02L standards, the risk-based  
26 screening level shall be the standards and interim standards established in 15A NCAC  
27 02L.
- 28 (33) "Site-specific target level" means risk-based values for chemicals of concern that are protective of  
29 human health for specified exposure pathways and are derived from a consideration of site-  
30 specific information. The site-specific target levels shall be consistent with the Department's risk-  
31 based corrective action standards under G.S. 130A-310.68 and rules adopted pursuant to Article 9  
32 of chapter 130A of the General Statutes. ~~are as follows:~~
- 33 (a) ~~For known or suspected carcinogens, the sum of individual excess lifetime cancer risk values~~  
34 ~~for all chemicals of concern for all exposure pathways may not exceed one in~~  
35 ~~100,000~~ 10,000.
- 36 (b) ~~For systemic toxicants, the Hazard Index for all chemicals of concern for all complete~~  
37 ~~exposure pathways may not exceed 1.0.~~

1 (34) "Source" means non-aqueous phase liquid chemical, the locations of highest soil or ground water  
2 concentrations of the chemicals of concern, ~~concern~~ or the location releasing the chemical of  
3 concern.

4 (35) "Systemic toxicant" means a substance or agent that may enter the human body and have an adverse  
5 health effect other than causing cancer.

6 (36) "Unsaturated zone" means that part of the subsurface where interconnected voids are not all filled with  
7 water.

8 ~~Note: Portions of this rule extracted, with permission, from E2081-00(2004)e1 Standard Guide for Risk Based~~  
9 ~~Corrective Action, copyright ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428,~~  
10 ~~www.astm.org.~~

11 *History Note: Authority G.S. 143-215.104B; 143-215.104D(b); ~~150B-21.2~~;*

12 *Eff. August 1, 2000;*

13 *Temporary Amendment Eff. June 1, 2001;*

14 *Amended Eff. October 1, 2007; August 1, 2002.*

## 17 SECTION .0200 – MINIMUM MANAGEMENT PRACTICES

### 18 15A NCAC 02S .0201 APPLICABILITY

19 The provisions contained in this Section set forth the minimum management practices for the storage and handling  
20 of dry-cleaning solvents required to be implemented at all dry-cleaning facilities, dry-cleaning solvent wholesale  
21 distribution facilities, and abandoned sites. The provisions contained in this Section are applicable only to owners  
22 and operators of dry-cleaning facilities, dry-cleaning solvent wholesale distribution facilities, and abandoned sites.

23 *History Note: Authority G.S. 143-215.104D(b); ~~150B-21.2~~;*

24 *Eff. August 1, 2000;*

25 *Amended Eff. August 1, 2002.*

### 27 15A NCAC 02S .0202 REQUIRED MINIMUM MANAGEMENT PRACTICES

28 (a) All abandoned sites, as defined by G.S.143-215.104B(b)(1), ~~G.S.143-215.104(B)(b)(1)~~, shall at all times after  
29 August 1, 2000, this Rule becomes effective, comply with Required Minimum Management Practice, Subparagraph  
30 (b)(5) of this Rule.

31 (b) All dry-cleaning facilities and wholesale distribution facilities shall ~~shall, at all times after this Rule becomes~~  
32 ~~effective~~, comply with the following minimum management practices:

33 (1) At no time shall any dry-cleaning solvent, wastes containing dry-cleaning solvent, or water containing  
34 dry-cleaning solvent be discharged onto land or into waters of the State, sanitary sewers, storm drains,  
35 floor drains, septic systems, boilers, or cooling- towers. All invoices generated as a result of disposal of  
36 all dry-cleaning solvent waste shall be made available for review upon request by the Department. If a  
37 dry-cleaning facility uses devices such as atomizers, evaporators, carbon filters, or other equipment for

1 the treatment of wastewater containing solvent, all records, including ~~but not limited to,~~ invoices for the  
2 purchase, maintenance, and service of ~~the such~~ devices, shall be made available upon request by ~~to~~ the  
3 Department. Records shall be kept for a period of three years.

4 (2) Spill containment shall be installed and maintained under and around dry-cleaning machines, filters,  
5 dry-cleaning solvent pumps, stills, vapor adsorbers, solvent storage areas, and waste solvent storage  
6 areas by January 1, 2002. Spill containment shall have a volumetric capacity of 110 percent of the  
7 largest vessel, tank, or container within the spill containment area and shall be capable of preventing the  
8 release of the applicable liquid dry-cleaning solvent beyond the spill containment area for a period of at  
9 least 72 hours. All floor drains within or beneath the spill containment area shall be removed or  
10 ~~permanently~~ sealed with materials impervious to dry-cleaning solvents. Emergency adsorbent spill  
11 clean-up materials shall be on the premises. Facilities ~~shall must~~ maintain an emergency response plan  
12 that is in compliance with federal, ~~State state~~ and local requirements.

13 (3) All perchloroethylene dry-cleaning machines installed at a dry-cleaning facility after August 1, 2000,  
14 ~~the effective date of this Rule~~ shall meet air emissions that equal or exceed the standards that apply to a  
15 comparable dry-to-dry perchloroethylene dry-cleaning machine with an integrated refrigerated  
16 condenser. All perchloroethylene dry-cleaning facilities ~~shall must~~ be in compliance with the EPA  
17 Perchloroethylene Dry Cleaner NESHAP: 40CFR, Part 63, Subpart M to be eligible for certification.

18 (4) Facilities that use perchloroethylene shall use a closed container solvent transfer system by January 1,  
19 2002.

20 (5) After February 1, 2001, ~~Within six months of the effective date of this Rule,~~ no dry-cleaning facility  
21 shall use underground storage tanks for solvents or waste.

22 *History Note: Authority G.S. 143-215.104D(b); ~~150B-21.2;~~*

23 *Eff. August 1, 2000;*

24 *Temporary Amendment Eff. June 1, 2001;*

25 *Amended Eff. August 1, 2002.*

## 26 27 **SECTION .0300 - PETITIONS FOR CERTIFICATION**

### 28 **15A NCAC 02S .0301 FILING**

29 (a) Any potentially responsible party ~~petitioning may petition~~ for certification of a facility site ~~shall file by filing~~ a  
30 petition with the Division using the DSCA Petitioner Questionnaire Form forms provided by the Division. The  
31 petition shall include a laboratory analysis demonstrating the presence of dry-cleaning solvent in environmental  
32 media at the discovery site. Pursuant to G.S. 143-215.104F and .104G, the DSCA Petitioner Questionnaire Form  
33 shall include the following:

34 (1) petitioner contact information, their corporate status, and their relationship to the facility site;

35 (2) property owner contact information;

36 (3) location of the facility site; and

1 ~~(4) status of the facility, and facility size pursuant to 15A NCAC 02S .0103. Petitions shall be verified by~~  
2 ~~the petitioner, and shall include a laboratory analysis demonstrating the presence of dry cleaning~~  
3 ~~solvent in environmental media at the discovery site.~~

4 (b) Petition forms may be obtained from the Dry-Cleaning Solvent Cleanup Act Program of the Superfund Section  
5 of the Division at <https://deq.nc.gov/about/divisions/waste-management/dry-cleaning-solvent-cleanup-act-program>;  
6 401 Oberlin Road, Raleigh, North Carolina, 27605.

7 *History Note: Authority G.S. 143-215.104D(b); ~~143-215.104F; 143-215.104G; 150B-21.2;~~*  
8 *Temporary Adoption Eff. June 1, 2001;*  
9 *Eff. August 1, 2002.*

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13 **SECTION .0500 – RISK-BASED CORRECTIVE ACTION**

14 **15A NCAC 02S .0501 PURPOSE AND APPLICABILITY**

15 The purpose of this Section is to establish a risk-based corrective action approach for assessment and remediation of  
16 contamination at certified dry-cleaning facilities or abandoned sites. This Rule applies to risk-based corrective action  
17 undertaken pursuant to the terms of assessment and remediation agreements between petitioners and the Division.

18 *History Note: Authority G.S. 143-215.104D; ~~143-215.104H; 143-215.104I; 150B-21.2;~~*  
19 *Eff. September 1, 2007.*

20  
21 **15A NCAC 02S .0502 ABATEMENT OF IMMINENT HAZARD**

22 If the Division determines from factors such as chemical concentrations, exposure pathways, and receptors that  
23 contamination or conditions at a site constitute an imminent hazard as defined in G.S. 143-215.104B(b)(16), the  
24 Division shall ~~may~~ require the development and implementation of a plan to abate the imminent hazard. Actions  
25 taken to abate the imminent hazard may include, ~~but are not limited to,~~ provision of alternate sources of drinking  
26 water, soil excavation, vapor mitigation, ~~mitigation~~ and well abandonment.

27 *History Note: Authority G.S. 143-215.104C; 143-215.104D; ~~143-215.104N; 150B-21.2;~~*  
28 *Eff. September 1, 2007.*

29  
30 **15A NCAC 02S .0503 PRIORITIZATION OF CERTIFIED FACILITIES AND SITES**

31 (a) The Division shall determine the priority ranking of certified facilities and abandoned sites for the initiation and  
32 scheduling of assessment and remediation activities.

33 (b) The Division shall consider the following factors in determining the priority ranking of a facility or site:

- 34 (1) proximity ~~Proximity~~ of contamination to public and private water supply wells and surface water;  
35 (2) existing ~~Existing~~ or potential impacts to public and private water supply wells and surface water;  
36 (3) existing ~~Existing~~ or potential vapors from contamination entering buildings and other structures;  
37 (4) existing ~~Existing~~ or potential exposure to contaminated soils;

1 (5) ~~the~~ The degree of contamination in soil, groundwater, ~~groundwater~~ and surface water; and

2 (6) ~~any~~ Any other factor relevant to the degree of harm or risk to public health and the environment posed  
3 by the existence or migration of contamination at the facility or site.

4 ~~(e) The Division shall determine the initial priority of facilities and sites based on information available to the~~  
5 ~~Division.~~

6 ~~(c) (d)~~ The priority ranking of facilities and sites shall be ~~updated and revised~~ annually to reflect updated changes in  
7 ~~site conditions and current~~ information.

8 *History Note: Authority G.S. 143-215.104C; 143-215.104D; ~~150B-21.2;~~*

9 *Eff. September 1, 2007.*

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11  
12 **15A NCAC 02S .0506 TIERED RISK ASSESSMENT**

13 (a) A tiered risk assessment shall be conducted to establish risk-based screening levels or site-specific target levels  
14 for a site.

15 (b) A site conceptual model shall be developed including the following elements:

16 (1) ~~the~~ The type and distribution of chemicals of concern;

17 (2) ~~the~~ The geology and hydrogeology;

18 (3) ~~an~~ An exposure model that identifies the receptors, including sensitive subgroups, and the exposure  
19 pathways; and

20 (4) ~~land~~ Land-use classification as either residential or non-residential.

21 (c) Tier 1. A Tier 1 risk assessment is based on chemical-specific risk-based screening levels. The representative  
22 concentrations of chemicals of concern that exist at a site shall be compared to these risk-based screening levels for  
23 all complete and potentially complete exposure pathways. If the concentrations exceed the risk-based screening  
24 levels, the Division may require remediation of the site to risk-based screening levels or the performance of a Tier 2  
25 risk assessment to establish site-specific target levels. Factors considered by the Division when determining if a Tier  
26 2 assessment is warranted shall include:

27 (1) ~~whether~~ Whether the assumptions on which the risk-based screening levels are based are representative  
28 of the site-specific conditions;

29 (2) ~~whether~~ Whether the site-specific target levels developed under Tier 2 either are likely to be  
30 significantly different than the risk-based screening levels or will significantly modify remediation  
31 activities; or

32 (3) ~~whether~~ Whether the cost of remediation to achieve risk-based screening levels will likely be greater  
33 than the cost of further tier evaluation and subsequent remediation.

34 (d) Tier 2. A Tier 2 assessment shall allow consideration of site-specific information in order to calculate site-  
35 specific target levels. This information includes the locations of actual points of exposure and points of  
36 demonstration as well as site-specific geologic, hydrogeologic, ~~hydrogeologic~~ and contaminant fate and transport  
37 parameters. All parameters and procedures used during the Tier 2 risk assessment shall be provided approved by the

1 ~~Division~~—The representative concentrations of chemicals of concern that exist at a site shall be compared to these  
2 Tier 2 site-specific target levels for all complete and potentially complete exposure pathways. If the concentrations  
3 exceed the Tier 2 site-specific target levels, the Division may require remediation of the site to Tier 2 site-specific  
4 target levels or the performance of a Tier 3 risk assessment to establish alternative site-specific target levels. Factors  
5 considered by the Division when determining if a Tier 3 assessment is warranted shall include:

- 6 (1) ~~whether~~ ~~Whether~~—the assumptions on which the Tier 2 site-specific target levels are based are  
7 ~~sufficiently~~ representative of the site-specific conditions;
- 8 (2) ~~whether~~ ~~Whether~~—the alternative site-specific target levels developed under Tier 3 either are likely to be  
9 ~~significantly~~ different than the Tier 2 site-specific target levels or will ~~significantly~~ modify remediation  
10 activities; or
- 11 (3) ~~whether~~ ~~Whether~~—the cost of remediation to achieve Tier 2 site-specific target levels will likely be  
12 greater than the cost of further tier evaluation and subsequent remediation.

13 (e) Tier 3. A Tier 3 risk assessment shall allow consideration of additional site-specific and toxicological data in  
14 order to calculate alternative site-specific target levels. This data may include alternative, technically defensible  
15 toxicity factors, physical and chemical properties, site-specific exposure factors, and alternative fate and transport  
16 models. The representative concentrations of chemicals of concern that exist at a site shall be compared to these Tier  
17 3 site-specific target levels for all complete and potentially complete exposure pathways. If the concentrations  
18 exceed the Tier 3 site-specific target levels, the Division shall consider the results of the Tier 2 and Tier 3  
19 assessments to determine the site-specific target levels.

20 (f) The determination of risk-based screening levels and site-specific target levels shall be based on the following  
21 assumptions and requirements:

- 22 (1) ~~concentrations~~ ~~Concentrations~~—of chemicals of concern in soil shall not exceed Tier 1 residential risk-  
23 based screening levels on land classified as residential land use. Concentrations in soil may exceed  
24 Tier 1 residential risk-based screening levels on property containing both residential and non-  
25 residential land use if the ground-level uses are non-residential and the potential for exposure to  
26 contaminated soil has been eliminated;
- 27 (2) ~~an~~ ~~An~~—ecological risk evaluation shall be conducted ~~with guidance provided by the Division to~~  
28 determine the risk to plant and animal receptors and ~~habitats;~~ ~~habitats~~.
- 29 (3) ~~the~~ ~~The~~—most recent versions of the following references, in order of preference, shall be used to obtain  
30 the quantitative toxicity values necessary to calculate risk to identified receptors:
  - 31 (A) Integrated Risk Information System (IRIS);
  - 32 (B) ~~provisional peer reviewed toxicity values~~ ~~Provisional Peer Reviewed Toxicity Values~~  
33 (PPRTVs); ~~and~~
  - 34 (C) ~~published~~ ~~Published~~—health risk assessment data, and scientifically valid peer-reviewed  
35 published toxicological ~~data;~~ ~~data~~.
- 36 (4) ~~all~~ ~~All~~—current and probable future use of groundwater shall be protected. If groundwater has been  
37 contaminated or is likely to be contaminated, a point of exposure ~~shall~~ ~~must~~ be established to



1 quantitatively evaluate the groundwater use pathway. The point of exposure shall be established at the  
2 nearest to the source of the following locations:

- 3 (A) ~~closest~~ Closest-existing water supply well;
- 4 (B) ~~likely~~ Likely-nearest future location of a water supply well;
- 5 (C) ~~hypothetical~~ Hypothetical-point of exposure located at a distance of 500 feet from the  
6 downgradient property boundary of the facility site; or
- 7 (D) ~~hypothetical~~ Hypothetical-point of exposure located at a distance of 1000 feet downgradient  
8 from the ~~source~~; source.

- 9 (5) ~~for~~ For-chemicals of concern for which there is a groundwater quality standard in 15A NCAC 02L,  
10 concentrations at the point of exposure shall not exceed the groundwater quality standards as specified  
11 in 15A NCAC 02L. For chemicals of concern for which there are no groundwater quality standards,  
12 concentrations at the point of exposure shall not exceed the risk-based screening levels or site-specific  
13 target levels for these chemicals of concern that assume ingestion based on domestic water use;
- 14 (6) ~~concentrations~~ Concentrations-of chemicals of concern shall be measured and evaluated at a point of  
15 demonstration well to ensure that concentrations are protective of any point of exposure; ~~exposure~~.
- 16 (7) ~~surface~~ Surface-water is protected. The standards for surface water shall be the water quality standards  
17 in 15A NCAC 02B.

18 *Note: Portions of this rule extracted, with permission, from E2081-00(2004)e1 Standard Guide for Risk Based*  
19 *Corrective Action, copyright ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428,*  
20 *www.astm.org.*

21 *History Note: Authority G.S. 143-215.104D; 150B-21.2;*  
22 *Eff. September 1, 2007.*

#### 23 24 **15A NCAC 02S .0507 REMEDIAL ACTION PLAN**

25 (a) If the level of contamination of any chemical of concern exceeds risk-based screening levels or site-specific  
26 target levels, a remedial action plan shall be developed and implemented at the site.

27 (b) A remedial action plan ~~shall~~ must-be sufficient to meet the risk-based screening levels or site-specific target  
28 levels established for the site and shall include, if applicable:

- 29 (1) ~~a~~ A-summary of the results of all assessment and interim remedial activities conducted at the site;
- 30 (2) ~~justification~~ Justification-for the remediation method selected based on an analysis of each of the  
31 following factors:
  - 32 (A) ~~results~~ Results-from any pilot studies or bench tests;
  - 33 (B) ~~the~~ The-remediation methods considered and why other alternatives were rejected;
  - 34 (C) ~~practical~~ Practical-considerations in implementing the remediation, including ease of  
35 construction, site access, and required permits;
  - 36 (D) ~~operation~~ Operation-and maintenance requirements;

- 1 (E) ~~the~~ The risks and effectiveness of the proposed remediation including an evaluation of the type,  
2 degree, frequency, and duration of any post-remediation activity that may be required,  
3 including operation and maintenance, monitoring, inspection, reporting, and other activities  
4 necessary to protect public ~~health or health, safety, and welfare~~ and the environment;
- 5 (F) ~~long-term~~ Long term reliability and feasibility of engineering and institutional controls;
- 6 (G) ~~technical~~ Technical feasibility of the proposed method to reduce the concentrations of  
7 chemicals of concern at the site;
- 8 (H) ~~estimated~~ Estimated time required to achieve risk-based screening levels or site-specific target  
9 levels;
- 10 (I) ~~cost-effectiveness~~ Cost effectiveness of installation, operation and maintenance, when  
11 compared to other remediation alternatives; and
- 12 (J) ~~community acceptance;~~ Community acceptance.
- 13 (3) ~~an~~ An evaluation of the expected breakdown chemicals or by-products resulting from natural  
14 processes;
- 15 (4) ~~a~~ A discussion of the proposed treatment or disposition of contaminated media that may be produced  
16 by the remediation system;
- 17 (5) ~~an~~ An operation and maintenance plan and schedule for the remediation system;
- 18 (6) ~~design~~ Design drawings of the proposed remediation system;
- 19 (7) ~~a~~ A groundwater monitoring plan to monitor plume stability and effectiveness of the remediation;
- 20 (8) ~~a~~ A plan to evaluate the effectiveness of the remedial efforts and the achievement of risk-based  
21 screening levels or site-specific target levels;
- 22 (9) ~~a~~ A plan that addresses the health and safety of nearby residential and business communities;
- 23 (10) ~~a~~ A discussion of how the remedial action plan will protect ecological receptors;
- 24 (11) ~~all~~ All required land-use restrictions and notices prepared in accordance with G.S. 143-215.104M and  
25 15A NCAC 02S. 0508; and
- 26 (12) ~~measures~~ Measures necessary to protect plant and animal receptors and habitats.
- 27 (c) Monitored natural attenuation of chemicals of concern may be approved as an acceptable remediation method,  
28 provided:
- 29 (1) ~~all~~ All free product has been removed or controlled to the maximum extent practicable;
- 30 (2) ~~contaminated~~ Contaminated soil is not present in the unsaturated zone above risk-based screening  
31 levels or site-specific target levels for the soil-to-groundwater pathway for the site unless it is  
32 demonstrated that the soil does not constitute a continuing source of contamination to groundwater at  
33 concentrations that pose a threat to human health, safety or the environment, and it is demonstrated that  
34 the rate of natural attenuation of chemicals of concern in groundwater exceeds the rate at which the  
35 chemicals of concern are leaching from the soil;
- 36 (3) ~~the~~ The physical, chemical and biological characteristics of each chemical of concern and its by-  
37 products are conducive to degradation or attenuation under the site-specific conditions;

- 1 (4) ~~the The~~ travel time and direction of migration of chemicals of concern can be predicted with  
2 reasonable certainty;
- 3 (5) ~~available Available~~ data shows an apparent or potential decrease in concentrations of chemicals of  
4 concern;
- 5 (6) ~~the The~~ chemicals of concern will not migrate onto adjacent properties that are not served by an  
6 existing public water supply system, unless the owners have consented to the migration of chemicals of  
7 concern onto their property;
- 8 (7) ~~if If~~ any of the chemicals of concern are expected to intercept surface waters, the groundwater  
9 discharge will not exceed the standards for surface water contained in 15A NCAC 02B .0200;
- 10 (8) ~~all All~~ necessary access agreements needed to monitor groundwater quality have been or can be  
11 obtained; and
- 12 (9) ~~a A~~ monitoring program, sufficient to track the degradation and attenuation of chemicals of concern  
13 and by-products within and down-gradient of the plume and detect chemicals of concern and by-  
14 products at least one year's travel time prior to their reaching any existing or foreseeable receptor, is  
15 developed and implemented. Analytical data collected during monitored natural attenuation shall be  
16 evaluated on an annual basis to determine if the annual rate of expected progress is being achieved.

17 (d) If the Division determines that it is technically impracticable to achieve a risk-based screening level or site-  
18 specific target level for a specific chemical of concern due to geological conditions, remediation technology  
19 limitations, site conditions, physical ~~limitations, limitations~~ or other factors, the Division may approve or modify the  
20 remedial action plan to provide for the use of institutional controls, engineering controls, and long-term monitoring  
21 until the risk-based screening levels or site-specific target levels are met. Methods that may be used to demonstrate  
22 that remediation is technically impracticable include the following:

- 23 (1) ~~a A~~ full-scale field demonstration consisting of an operating remediation system;
- 24 (2) ~~a A~~ pilot study applying a remediation technology on a small portion of the contaminated site;
- 25 (3) ~~predictive Predictive~~ analyses or modeling that shows the potential for the migration and remediation  
26 of chemicals of concern to occur at the site;
- 27 (4) ~~comparison Comparison~~ of specific conditions at the subject site to those of similar sites in case studies  
28 or peer-reviewed and published research papers;
- 29 (5) ~~a A~~ combination of the above methods; or
- 30 (6) ~~other Other~~ equivalent methods that demonstrate that remediation is technically impracticable.

31 *History Note: Authority G.S. 143-215.104D; ~~150B-21.2;~~*

32 *Eff. September 1, 2007.*

33

34 **15A NCAC 02S .0508 LAND-USE RESTRICTIONS**

35 ~~(a) The Division, pursuant to the risk assessment procedures of 15A NCAC 02S .0506, Division~~ may require the  
36 imposition, ~~recording, recording~~ and enforcement of land-use restrictions pursuant to G.S. 143-215.104M.

37 ~~(b) All land use restrictions and notices shall be on forms provided by the Division.~~

1 *History Note: Authority G.S. 143-215.104D; 143-215.104M; ~~150B-21.2;~~*

2 *Eff. September 1, 2007.*

3  
4 **15A NCAC 02S .0509 NO FURTHER ACTION CRITERIA**

5 (a) A "No Further Action" notice documents the Division's decision that the site has been assessed and remediated,  
6 and that the site conditions pose no unacceptable risks as long as the recorded land-use restrictions are maintained.

7 The Division shall issue a "No Further Action" notice letter if each of the following criteria is met:

8 (1) ~~risk-based~~ Risk-based screening levels or site-specific target levels for each chemical of concern have  
9 been achieved, and, if applicable, plant and animal receptors and their habitats have been  
10 protected; ~~protected~~.

11 (2) ~~The stability monitoring~~ of the groundwater plume ~~for has been verified by a monitoring period of at~~  
12 least one year following a complete site characterization as described in 15A NCAC 02S .0504 shows  
13 that the plume is not expanding, and concentrations of chemicals of concern in groundwater exhibit a  
14 stable or decreasing trend based on all available data representative of the entirety of the groundwater  
15 plume; ~~after achievement of the goals set forth in the remedial action plan;~~ and

16 (3) all ~~All~~ required land-use restrictions and notices pursuant to G.S. 143-215.104M have been filed in the  
17 office of the register of deeds of the county or counties in which the property described is  
18 located; ~~recorded~~.

19 (b) The Division shall not issue a "No Further Action" notice letter if the Division has determined that it is  
20 technically impracticable pursuant to 15A NCAC 02S .0507 to remediate the site to risk-based screening levels or  
21 site-specific target levels.

22 (c) If site conditions change or additional information becomes available to the Division to indicate that the "No  
23 Further Action" notice letter no longer applies, the site poses an unacceptable risk to human health, safety, ~~safety~~ or  
24 the environment, or the land-use restrictions imposed in accordance with G.S. 143-215.104M are violated, the  
25 Division may rescind the "No Further Action" notice letter and require further remedial action at the site.

26 *History Note: Authority G.S. 143-215.104D; 143-215.104M; ~~150B-21.2;~~*

27 *Eff. September 1, 2007.*