

3745-300-15 Remediation.

(A) Applicability.

- (1) Remedial activities must be conducted to meet applicable standards when a “Phase II Property assessment” conducted in accordance with rule 3745-300-07 of the Administrative Code reveals that concentrations of chemical(s) of concern in any environmental media exceed:
 - (a) Applicable standards as determined from the generic numerical standards in accordance with rule 3745-300-08 of the Administrative Code;
 - (b) Applicable standards as determined from a property-specific risk assessment conducted in accordance with rule 3745-300-09 of the Administrative Code;
 - (c) background levels as determined in accordance with rule 3745-300-07 of the Administrative Code, when background levels are the applicable standards; or
 - (d) Any other applicable standard of this chapter.
- (2) An operation and maintenance plan is required for a remedy that includes any of the following:
 - (a) An institutional control that is not recorded on a deed;
 - (b) An engineering control;
 - (c) An on-going long term active or passive remedy employed at a property that does not yet meet applicable standards at the time that a no further action letter is issued; or
 - (d) activities required by the ground water classification rule in paragraphs (f)(2)(a)(v) to (f)(2)(a)(viii), (f)(2)(b)(vi) to (f)(2)(b)(ix), (f)(3)(a)(v) to (f)(3)(a)(viii), or (f)(3)(b)(vi) to (f)(3)(b)(ix) of rule 3745-300-10 of the Administrative Code, which are used to maintain compliance with applicable standards.

(B) Definitions. For the purposes of this rule:

- (1) "Active remediation" or “active remedy” means actions taken to reduce the mass, toxicity, mobility or concentrations of chemical(s) of concern. Active remediation includes but is not limited to the removal of the hazardous substances or petroleum from the property or the design and installation of the following: air sparging; soil washing; pump and treat; steam stripping; soil vapor extraction;

excavation; and enhancement of bioremediation.

- (2) "Passive remediation" or "passive remedy" means in situ natural methods, documented in peer-reviewed scientific literature, which reduce the mass, toxicity, mobility or concentrations of chemical(s) of concern over distance and time through natural attenuation processes. Terms associated with passive remediation include, but are not limited to natural attenuation, intrinsic bioremediation, intrinsic remediation and bioremediation.
 - (3) "Natural attenuation" means in situ biotic and abiotic processes through which passive remediation occurs. Natural attenuation processes can be non-destructive, including but not limited to the following physical processes: absorption, advection, dispersion, diffusion, and dilution from recharge and volatilization. Natural attenuation processes can also be destructive, including but not limited to the following chemical processes: aerobic, hypoxic and anaerobic biodegradation, and chemical degradation, including adsorption, abiotic oxidation processes, hydrolysis and other reactions.
 - (4) "Operation and maintenance plan" means a written plan describing the activities necessary to ensure that a remedy maintains compliance with applicable standards or that a remedy will achieve compliance with applicable standards within five years or such other time frame as agreed upon by the director in an operation and maintenance agreement. The operation and maintenance plan must ensure that a remedy continues to be protective of public health, safety, and the environment.
- (C) Compliance with other laws. Remedial activities conducted under this chapter and Chapter 3746. Of the Revised Code must be conducted in compliance with all applicable federal and state laws and regulations and local laws.
- (D) Remedial activities. If remedial activities are required to be conducted under paragraph (A) of this rule, one or more of the following remedial activities must be conducted to ensure that applicable standards are met and maintained at a property:
- (1) Passive remediation. Passive remediation must be capable of attaining and demonstrated to attain applicable standards within five years, or such other time frame agreed upon by the director in an operation and maintenance agreement in accordance with this rule;
 - (2) Active remediation. Active remediation may be short-term activities, such as soil removal and proper disposal, the construction of an engineered control, such as a cap, or ground water gradient reversal. Alternately, active remediation may involve long-term activities such as ground water pump-and-treat systems. If a volunteer chooses to conduct long-term active remediation, the chosen remedial action must be capable of attaining and demonstrated to attain applicable

standards within five years, or such other time frame agreed upon by the director in an operation and maintenance agreement in accordance with this rule;

(3) Institutional controls. Institutional controls must be consistent with the requirements contained in paragraphs (D)(3)(b)(iv)(b) and (D)(2)(c) of rule 3745-300-09 of the Administrative Code and paragraphs (B)(3) and (E)(13) of rule 3745-300-13 of the Administrative Code.

(4) Engineering controls. Engineering controls must be consistent with the requirements contained in paragraphs (D)(2)(d) and (D)(3)(b)(iv)(b) of rule 3745-300-09 of the Administrative Code.

(E) Verification. When remedial activities are completed under this chapter and Chapter 3746. Of the Revised Code, the volunteer or owner, if different from the volunteer must conduct verification in accordance with rule 3745-300-07 of the Administrative Code to confirm that a remedy conducted in accordance with this rule has resulted in a property meeting applicable standards, as determined in accordance with this chapter.

(1) Prior to the issuance of a no further action letter or following completion of the activities required in paragraph (F) of this rule, the volunteer or owner, if different from the volunteer, must demonstrate that a remedy implemented at a property complies with applicable standards as follows:

(a) Verification of a completed active or passive remedy. Verification must include, at a minimum, a demonstration showing that remediation has been completed and has resulted in applicable standards being met at the property; or

(b) Verification of the implementation of an institutional control. Verification must include, at a minimum, a demonstration that any institutional control relied upon in the no further action letter has been implemented and is contained in an operation and maintenance plan.

(2) The volunteer or owner, if different from the volunteer, must document that verification has been completed in accordance with this rule to support the no further action letter, and must describe the remedy or remedial activities implemented at a property which are a part of the voluntary action. Verification must include an identification of the data used to demonstrate that the property achieved compliance with the applicable standards contained in this chapter.

(F) Operation and maintenance.

(1) When a remedy is required to have an operation and maintenance plan, the volunteer

or owner, if different from the volunteer, must demonstrate that the remedy has been implemented in accordance with this rule and that the remedy will maintain compliance with applicable standards or will achieve compliance with applicable standards within five years or such other time frame agreed upon by the director in an operation and maintenance agreement. To make that demonstration, the volunteer or owner, if different from the volunteer, must develop and implement an operation and maintenance plan that includes the following components, as necessary:

- (a) Normal operation and maintenance plan. A description of activities required for normal operation and maintenance of engineering controls or procedures for maintenance of an institutional control including, but not limited to:
 - (i) A description of tasks for operation of the remedy or other engineering controls;
 - (ii) A description of tasks and procedures for maintaining engineering or institutional controls;
 - (iii) A description of prescribed treatment or operating conditions; and
 - (iv) Schedules showing the frequency of each task;
- (b) Plan for addressing potential operating problems, including, but not limited to:
 - (i) A description and analysis of potential operating problems;
 - (ii) A description of the means for detecting problems with the operation of the remedy; and
 - (iii) A description of reasonably anticipated activities that will be conducted and equipment utilized to correct potential operating problems with the remedy; and
 - (iv) If problems with normal operations occur, a contingency plan for maintaining the protectiveness of public health, safety, and the environment until normal operation of the remedy is restored;
- (c) Plan for modifications of normal operation and maintenance. A description of modifications to normal operation and maintenance of the remedy that are reasonably anticipated to ensure the remedy remains effective;

[comment: examples of modifications that might be required to maintain the effectiveness of a

remedy, but which may not be within the scope of normal operation and maintenance include changing the pumping rates of pumps installed in water extraction wells being used to control ground water gradient, or the installation of additional wells or larger pumps to achieve gradient control. Installation of an entirely different system would not be considered a modification of normal operation and maintenance it would be considered a new remedy requiring the issuance of a new no further action letter.]

- (d) Monitoring and sampling plan. If monitoring activities are required under paragraph (F)(2) of this rule, a monitoring plan which complies with the requirements contained in paragraph (F) of rule 3745-300-07 of the Administrative Code must be included in the operation and maintenance plan or operation and maintenance agreement that includes, at a minimum, the following:
- (i) A description of the purpose and objective of any monitoring activity;
 - (ii) A description of how all the requirements of paragraph (F)(2) of this rule will be met;
 - (iii) A description of monitoring activities to be conducted, including those conducted to implement institutional controls and to comply with paragraphs (F)(2)(a)(v) to (F)(2)(a)(viii), (F)(2)(b)(vi) to (F)(2)(b)(ix), (F)(3)(a)(v) to (F)(3)(a)(viii), or (F)(3)(b)(vi) to (F)(3)(b)(ix) of rule 3745-300-10 of the Administrative Code;
 - (iv) A summary of the sampling procedures developed in accordance with paragraph (F) of rule 3745-300-07 of the Administrative Code, if data collection, field testing, or sampling activities are required for monitoring activities;
 - (viii) A description of the anticipated length and frequency of any monitoring activity;
 - (ix) An identification and description of the criteria for termination, if necessary, of remedial activities;
 - (x) An identification and description of the criteria for termination, if necessary, of the monitoring activity; and
 - (xi) A requirement that if the termination criteria developed in accordance with paragraphs (F)(1)(d)(ix) and (F)(1)(d)(x) of this rule are met, the volunteer or owner, if different from the volunteer, must complete verification in accordance with paragraph (E) of this rule;

- (e) Equipment requirements. A description of equipment required to operate and maintain remedial activities, including:
 - (i) A description of installation of monitoring and remedial equipment; and
 - (ii) A schedule for the maintenance and replacement of monitoring and remedial equipment, as necessary; and

- (f) Records and reporting mechanisms. The operation and maintenance plan must contain a description of records to be kept for the purpose of documenting that the requirements of paragraph (F)(2) of this rule are met.

(2) Monitoring requirement.

- (a) At least once annually following the issuance of a no further action letter or at such other interval as agreed upon in an operation and maintenance agreement, the volunteer or owner, if different from the volunteer, must demonstrate the following through monitoring activities:
 - (i) The proper performance of the remedy;
 - (ii) The confirmation of the assumptions and predictions of a property-specific risk assessment and exposure assessment conducted in accordance with rule 3745-300-09 of the Administrative Code;
 - (iii) The manner in which compliance with applicable standards will be met or maintained, including, when long-term active or passive remediation has not yet achieved compliance with applicable standards, a specific demonstration that applicable standards will be met within five years of the implementation of the long-term active or passive remedy, or such other time frame as agreed upon by the director in an operation and maintenance agreement in accordance with this rule; and
 - (iv) The confirmation of the effectiveness of the remedy to maintain compliance with the applicable standard if either institutional controls or engineering controls are relied upon to achieve or maintain compliance with the applicable standards.

- (b) Confirmation made under paragraph (F)(2)(a)(iv) of this rule related to an engineering or institutional control is necessary so long as the controls are

necessary to achieve or maintain applicable standards at the property. Confirmation made under paragraph (F)(2)(a)(iv) of this rule related to on-going remediation is necessary until the remediation is complete and verification has been conducted according to paragraph (E) of this rule.

[Comment: monitoring activities may be modified in order to meet the requirements of this paragraph.]

- (3) When a remedy relies on an operation and maintenance plan, the operation and maintenance plan must be prepared and implemented prior to issuance of the no further action letter. A copy of the operation and maintenance plan must be submitted to the director of Ohio EPA with the no further action letter.
- (4) Operation and maintenance agreement. The volunteer must enter an operation and maintenance agreement with the director when seeking a covenant not to sue for any remedy which requires an operation and maintenance plan under paragraph (A)(2) of this rule.
 - (a) At a minimum, the operation and maintenance agreement must include the following:
 - (i) An operation and maintenance plan developed in accordance with paragraph (F)(1) of this rule and approved by the director;
 - (ii) A provision requiring periodic reporting of monitoring results to the director;
 - (iii) A provision requiring notification of the director of any proposed modifications made pursuant to paragraph (F)(1)(c) of this rule. Any proposed modifications other than those contained in paragraph (F)(1)(c) of this rule must be agreed upon by the director;
 - (iv) A provision requiring that prior notification be provided to the director of any transfer of a property which has a remedy subject to an operation and maintenance agreement;
 - (v) The establishment and description of the financial assurances developed in accordance with paragraph (g) of this rule, which must be used to ensure the remedies selected for implementation at the property will be maintained and operated;
 - (vi) A provision for inspection of the property by the Ohio EPA to determine compliance with the terms of the operation and maintenance agreement;

(vii) Mechanisms for providing reports to Ohio EPA, including, but not limited to:

- (a) Daily operating logs;
- (b) Laboratory records;
- (c) A procedure for reporting emergencies;
- (d) Maintenance records; and
- (e) A description of the reports provided to Ohio EPA and the frequency for reporting; and

(vii) Other provisions necessary to protect public health, safety and the environment.

- (b) An operation and maintenance agreement may specify a reasonable time frame within which a selected remedy must attain applicable standards.

(G) Financial assurance is required as a part of an operation and maintenance agreement. In accordance with paragraph (f)(4)(a)(v) of this rule, the volunteer or owner, if different from the volunteer, must execute and fund a financial assurance mechanism selected by the volunteer or owner, if different from the volunteer, and agreed to by the director in an operation and maintenance agreement. The financial assurance mechanism must ensure that a remedy selected for implementation at a property will be maintained and operated in order to meet or maintain applicable standards at a property.

[Comment: examples of financial assurance mechanisms include: a trust fund; a surety bond which guarantees payment into a trust fund or implementation of a remedy; a letter of credit; insurance; a financial test and corporate guarantee; or other such financial assurance mechanisms as approved by the director.]

(H) “Class V” underground injection control wells: a voluntary action which includes a remedy or remedial activities conducted to address hazardous substances or petroleum associated with “Class V” underground injection control wells at a property must be consistent with the remedial standards, as applicable standards, established in the safe drinking water act for those “Class V” underground injection control wells. If standards under the Safe Drinking Water Act are inconsistent with the standards contained in this chapter, the standards under the Safe Drinking Water Act become the applicable standards.

(I) Provisions for protecting ground water meeting potable use standards: when the activities conducted under paragraph (D)(3) of rule 3745-300-07 of the Administrative Code

indicate that paragraph (F) of rule 3745-300-10 of the Administrative Code is applicable, the volunteer or owner, if different from the volunteer, must demonstrate through monitoring activities conducted in accordance with rule 3745-300-07 of the Administrative Code and paragraph (F)(2) of this rule, attainment or maintenance of potable use standards, as applicable standards, at the water table underlying the property.

(J) Determining on and off property sources: when the activities conducted under paragraph (D)(8) of rule 3745-300-07 of the Administrative Code indicate that paragraphs, (F)(2)(b), (F)(2)(c), (F)(3)(b), (F)(3)(c), (F)(4)(b), (F)(4)(c), (F)(5)(b), (F)(5)(c), and (F)(6)(b), (F)(6)(c) of rule 3645-300-10 of the Administrative Code are applicable, the volunteer, or owner, if different from the volunteer, must monitor or verify in accordance with this rule and rule 3745-300-07 of the Administrative Code that the source of ground water contamination on the property and caused by the source has been addressed to ensure that ground water emanating from the property and caused by the source on the property meets the generic or risk-derived unrestricted potable use standards at the property boundary.

[Comment: the volunteer or owner if different must address dense non-aqueous phase liquids (“DNAPLS”) in such a manner that will not increase the risk of a release to receptors or increase the extent of the contamination. For guidance on how to address DNAPLS either contact Ohio EPA, or refer to the book: “Dense Chlorinated Solvents-and Other DNAPLS in groundwater: History, Behavior, and Remediation” by James F. Pankow and John A. Cherry; published by Waterloo Press, 1996.]

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