



Ohio Administrative Code

Rule 3745-525-202 Liner design criteria for existing CCR surface impoundments, 40 C.F.R. 257.71.

Effective: October 1, 2026

(A)

(1) The owner or operator of an existing CCR surface impoundment shall document whether or not such unit was constructed with any one of the following:

(a) [Reserved.]

(b) A composite liner that meets the requirements of paragraph (B) of rule 3745-525-201 of the Administrative Code.

(c) An alternative composite liner that meets the requirements of paragraph (C) of rule 3745-525-201 of the Administrative Code.

(2) The hydraulic conductivity of the compacted soil shall be determined using recognized and generally accepted methods.

(3) An existing CCR surface impoundment is considered to be an existing unlined CCR surface impoundment if either of the following occur:

(a) The owner or operator of the CCR unit determines that the CCR unit is not constructed with a liner that meets the requirements of paragraph (A)(1)(b) or (A)(1)(c) of this rule.

(b) The owner or operator of the CCR unit fails to document whether the CCR unit was constructed with a liner that meets the requirements of paragraph (A)(1)(b) or (A)(1)(c) of this rule.

(4) All existing unlined CCR surface impoundments are subject to the requirements of paragraph (A) of rule 3745-525-710 of the Administrative Code.

(B) The owner or operator of the CCR unit shall obtain a certification from a qualified professional engineer attesting that the documentation as to whether a CCR unit meets the requirements of paragraph (A) of this rule is accurate.

(C) The owner or operator of the CCR unit shall comply with the recordkeeping requirements specified in paragraph (F) of rule 3745-525-50 of the Administrative Code, the notification requirements specified in paragraph (F) of rule 3745-525-60 of the Administrative Code, and the internet requirements specified in paragraph (F) of rule 3745-525-70 of the Administrative Code.

(D) Alternative liner demonstration. An owner or operator of a CCR surface impoundment constructed without a composite liner or alternative composite liner, as defined in paragraph (B) or (C) in rule 3745-525-201 of the Administrative Code, may submit an alternative liner demonstration to the director to demonstrate that based on the



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construction of the unit and surrounding site conditions, that there is no reasonable probability that continued operation of the surface impoundment will result in adverse effects to human health or the environment. The application and demonstration shall be submitted to the director not later than the relevant deadline in paragraph (D)(2) of this rule. The director will act on the submissions in accordance with the procedures in paragraph (D)(2) of this rule.

(1) Application and alternative liner demonstration submission requirements. To obtain approval under paragraph (D) of this rule, the owner or operator of the CCR surface impoundment shall submit all of the following:

(a) Application. The owner or operator of the CCR surface impoundment shall submit a letter to the director, announcing their intention to submit a demonstration under paragraph (D)(1)(b) of this rule. The application shall include the location of the facility and identify the specific CCR surface impoundment for which the demonstration will be made. The letter shall include all of the following:

(i) A certification signed by the owner or operator that the CCR unit is in full compliance with this chapter except for paragraph (A)(1) of rule 3745-525-202 of the Administrative Code.

(ii) Documentation supporting the certification required under paragraph (D)(1)(a)(i) of this rule that includes all of the following:

(a) Documentation that the groundwater monitoring network meets all the requirements of rule 3745-525-910 of the Administrative Code. This shall include documentation that the existing network of groundwater monitoring wells is sufficient to ensure detection of any groundwater contamination resulting from the impoundment, based on direction of flow, well location, screening depth and other relevant factors. At a minimum, the documentation shall include all of the following:

(i) A map of groundwater monitoring well locations in relation to the CCR unit that depicts the elevation of the potentiometric surface and the direction of groundwater flow across the site.

(ii) Well construction diagrams and drilling logs for all groundwater monitoring wells.



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- (iii) Maps that characterize the direction of groundwater flow accounting for temporal variations.
 - (iv) Any other data and analyses the owner or operator of the CCR surface impoundment relied upon when determining the design and location of the groundwater monitoring network.
 - (b) Documentation that the CCR surface impoundment remains in detection monitoring pursuant to rule 3745-525-930 of the Administrative Code as a precondition for submitting an application. This includes documentation that the groundwater monitoring program meets the requirements of rules 3745-525-920 and 3745-525-930 of the Administrative Code. Such documentation includes data of constituent concentrations, summarized in table format, at each groundwater monitoring well monitored during each sampling event, and documentation of the most recent statistical tests conducted, analyses of the tests, and the rationale for the methods used in these comparisons. As part of this rationale, the owner or operator of the CCR surface impoundment shall provide all data and analyses relied upon to comply with each of the requirements of this part.
 - (c) Documentation that the unit meets all the location restrictions under rules 3745-525-101 to 3745-525-105 of the Administrative Code.
 - (d) The most recent structural stability assessment required at paragraph (D) of rule 3745-525-204 of the Administrative Code.
 - (e) The most recent safety factor assessment required at paragraph (E) of rule 3745-525-204 of the Administrative Code.
- (iii) Documentation of the design specifications for any engineered liner components, as well as all data and analyses the owner or operator of the CCR surface impoundment relied on when determining that the materials are suitable for use and that the construction of the liner is of good quality and in-line with proven and accepted engineering practices.



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- (iv) Facilities with CCR surface impoundments located on properties adjacent to a water body shall demonstrate that there is no reasonable probability that a complete and direct transport pathway (i.e., not mediated by groundwater) can exist between the impoundment and any nearby water body. If the potential for such a pathway is identified, then the unit would not be eligible to submit a demonstration. If ongoing releases are identified, the owner or operator of the CCR unit shall address these releases in accordance with paragraph (A) of rule 3745-525-950 of the Administrative Code.
- (v) Upon submission of the application and any supplemental materials submitted in support of the application to the director, the owner or operator shall place the complete application in the facility's operating record as required by paragraph (F)(14) of rule 3745-525-50 of the Administrative Code.
- (b) Alternative liner demonstration package. The completed alternative liner demonstration package shall be certified by a qualified professional engineer. The package shall present evidence to demonstrate that, based on the construction of the unit and surrounding site conditions, there is no reasonable probability that operation of the surface impoundment will result in concentrations of constituents listed in appendix B to rule 3745-525-900 of the Administrative Code in the uppermost aquifer at levels above a groundwater protection standard. For each line of evidence, as well as any other data and assumptions incorporated into the demonstration, the owner or operator of the CCR surface impoundment shall include documentation on how the data were collected and why these data and assumptions adequately reflect potential contaminant transport from that specific impoundment. The alternative liner demonstration at a minimum shall contain all of the following lines of evidence:
 - (i) Characterization of site hydrogeology. A characterization of the variability of site-specific soil and hydrogeology surrounding the surface impoundment that will control the rate and direction of contaminant transport from the impoundment. The owner or operator shall provide all of the following as part of this line of evidence:
 - (a) Measurements of the hydraulic conductivity in the uppermost aquifer from all monitoring wells associated with the impoundment and discussion of the methods used to obtain these measurements.



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- (b) Measurements of the variability in subsurface soil characteristics collected from around the perimeter of the CCR surface impoundment to identify regions of substantially higher conductivity.
- (c) Documentation that all sampling methods used are in line with recognized and generally accepted practices that can provide data at a spatial resolution necessary to adequately characterize the variability of subsurface conditions that will control contaminant transport.
- (d) Explanation of how the specific number and location of samples collected are sufficient to capture subsurface variability if the samples are as follows:
 - (i) Samples are advanced to a depth less than the top of the groundwater table or twenty feet beneath the bottom of the nearest water body, whichever is greater.
 - (ii) Samples are spaced further apart than two hundred feet around the impoundment perimeter.
- (e) A narrative description of site geological history.
- (f) Conceptual site models with cross-sectional depictions of the site environmental sequence stratigraphy that include, at a minimum the following:
 - (i) The relative location of the impoundment with depth of ponded water noted.
 - (ii) Monitoring wells with screening depth noted.
 - (iii) Depiction of the location of other samples used in the development of the model.
 - (iv) The upper and lower limits of the uppermost aquifer across the site.
 - (v) The upper and lower limits of the depth to groundwater measured from monitoring wells if the uppermost aquifer is confined.



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- (vi) Both the location and geometry of any nearby points of groundwater discharge or recharge (e.g., surface water bodies) with potential to influence groundwater depth and flow measured around the unit.
- (ii) Potential for infiltration. A characterization of the potential for infiltration through any soil-based liner components and naturally occurring soil that control release and transport of leachate. All samples collected in the field for measurement of saturated hydraulic conductivity shall be sent to a certified laboratory for analysis under controlled conditions and analyzed using recognized and generally accepted methodology. Facilities shall document how the selected method is designed to simulate on-site conditions. The owner or operator shall also provide documentation of the following as part of this line of evidence:
 - (a) The location, number, depth, and spacing of samples relied upon is supported by the data collected in paragraph (D)(1)(b)(i) of this rule and is sufficient to capture the variability of saturated hydraulic conductivity for the soil-based liner components and naturally occurring soil.
 - (b) The liquid used to pre-hydrate the samples and measure long-term hydraulic conductivity reflects the pH and major ion composition of the CCR surface impoundment porewater.
 - (c) That samples intended to represent the hydraulic conductivity of naturally occurring soils (i.e., not mechanically compacted) are handled in a manner that will ensure the macrostructure of the soil is not disturbed during collection, transport, or analysis.
 - (d) Any test for hydraulic conductivity relied upon includes, in addition to other relevant termination criteria specified by the method, criteria that equilibrium has been achieved between the inflow and outflow, within acceptable tolerance limits, for both electrical conductivity and pH.
- (iii) Mathematical model to estimate the potential for releases. Owners or operators shall incorporate the data collected for paragraphs (D)(1)(b)(i) and (D)(1)(b)(ii) of this rule into a mathematical model to calculate the potential groundwater concentrations that may result in downgradient wells as a result of the impoundment. Facilities shall also, where available, incorporate the national-scale data on



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constituent concentrations and behavior provided by the existing risk record. Application of the model shall account for the full range of site current and potential future conditions at and around the site to ensure that high-end groundwater concentrations have been effectively characterized. All of the data and assumptions incorporated into the model shall be documented and justified.

(a) The models relied upon in paragraph (D)(1)(b)(iii) of this rule shall be well-established and validated, with documentation that can be made available for public review.

(b) The owner or operator shall use the models to demonstrate that, for each constituent in appendix B to rule 3745-525-900 of the Administrative Code, there is no reasonable probability that the peak groundwater concentration that may result from releases to groundwater from the CCR surface impoundment throughout its active life will exceed the groundwater protection standard at the waste boundary.

(c) The demonstration shall include the peak groundwater concentrations modeled for all constituents in appendix B to rule 3745-525-900 of the Administrative Code attributed both to the impoundment in isolation and in addition to background.

(iv) Upon submission of the alternative liner demonstration to the director, the owner or operator shall place the complete demonstration in the facility's operating record as required by paragraph (F)(15) of rule 3745-525-50 of the Administrative Code.

(2) Procedures for adjudicating requests.

(a) Deadline for application submission. The owner or operator shall submit the application under paragraph (D)(1)(a) of this rule to the director for approval not later than November 30, 2020.

(b) Deadline for demonstration submission. If the application is approved the owner or operator shall submit the demonstration required under paragraph (D)(1)(b) of this rule to the director for approval not later than November 30, 2021.

(i) Extension due to analytical limitations. If the owner or operator cannot meet the demonstration deadline due to analytical limitations related to the measurement of hydraulic conductivity, the owner or operator



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shall submit a request for an extension not later than September 1, 2021 that includes a summary of the data that have been analyzed to date for the samples responsible for the delay and an alternative timeline for completion that has been certified by the laboratory. The extension request shall include all of the following:

- (a) A timeline of fieldwork to confirm that samples were collected expeditiously.
 - (b) A chain of custody documenting when samples were sent to the laboratory.
 - (c) Written certification from the lab identifying how long it is projected for the tests to reach the relevant termination criteria related to solution chemistry.
 - (d) Documentation of the progression towards all test termination metrics to date.
- (ii) Length of extension. If the extension is granted, the owner or operator will have forty-five days beyond the timeframe certified by the laboratory to submit the completed demonstration.
- (iii) Extension due to analytical limitations for chemical equilibrium. If the measured hydraulic conductivity has not stabilized to within acceptable tolerance limits by the time the termination criteria for solution chemistry are met, the owner or operator shall submit a preliminary demonstration not later than September 1, 2021 (with or without the one-time extension for analytical limitations).
- (a) In this preliminary demonstration, the owner or operator shall submit a justification of how the bounds of uncertainty applied to the available measurements of hydraulic conductivity ensure that the final value is not underestimated.
 - (b) Ohio EPA will review the preliminary demonstration to determine if it is complete and, if so, will propose to deny or to tentatively approve the demonstration.
 - (c) Once the final laboratory results are available, the owner or operator shall submit a final demonstration that updates only the finalized hydraulic conductivity data to confirm that the model results in the preliminary demonstration are accurate.



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- (d) Until the time that Ohio EPA approves this final demonstration, the surface impoundment shall remain in detection monitoring or the demonstration will be denied.
 - (iv) Upon submission of a request for an extension to the deadline for the demonstration due to analytical limitations pursuant to paragraph (D)(2)(b)(i) of this rule, the owner or operator shall place the alternative liner demonstration extension request in the facility's operating record as required by paragraph (F)(16) of rule 3745-525-50 of the Administrative Code.
 - (v) Upon submission of a preliminary demonstration pursuant to paragraph (D)(2)(b)(iii) of this rule, the owner or operator shall place the preliminary demonstration in the facility's operating record as required by paragraph (F)(17) of rule 3745-525-50 of the Administrative Code.
- (c) Application review.
- (i) Ohio EPA will evaluate the application and may request additional information not required as part of the application as necessary to complete its review. Submission of a complete application will toll the facility's deadline to cease receipt of waste until issuance of a final decision. Incomplete submissions will not toll the facility's deadline and will be rejected without further process.
 - (ii) If the application is determined to be incomplete, Ohio EPA will notify the facility. The owner or operator shall place the notification of an incomplete application in the facility's operating record as required by paragraph (F)(18) of rule 3745-525-50 of the Administrative Code.
 - (iii) [Reserved.]
 - (iv) If the application is approved, the deadline to cease receipt of waste will be tolled until an alternative liner demonstration is determined to be incomplete or a final decision under paragraph (D)(2)(f) of this rule is issued.
 - (v) If the surface impoundment is determined by Ohio EPA to be ineligible to apply for an alternative liner demonstration, and the facility lacks alternative capacity to manage its CCR or non-CCR waste streams, the owner or operator may apply for an alternative closure deadline



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in accordance with the procedures in paragraph (F) of rule 3745-525-730 of the Administrative Code. The owner or operator will be given four months from the date of the ineligibility determination to apply for the alternative closure provisions in either paragraph (F)(1) or (F)(2) of rule 3745-525-730 of the Administrative Code, during which time the facility's deadline to cease receipt of waste will be tolled.

(vi) Upon receipt of a decision on the application, the owner or operator shall place the decision on the application in the facility's operating record as required by paragraph (F)(19) of rule 3745-525-50 of the Administrative Code.

(d) Demonstration review. Ohio EPA will evaluate the demonstration package and may request additional information not required as part of the demonstration as necessary to complete its review. Submission of a complete demonstration package will continue to toll the facility's deadline to cease receipt of waste into that CCR surface impoundment until issuance of a final decision under paragraph (D)(2)(f) of this rule. Upon a determination that a demonstration is incomplete the tolling of the facility's deadline will cease and the submission will be rejected without further process.

(e) [Reserved.]

(f) Final decision on demonstration. Ohio EPA will issue its decision on the alternative liner demonstration package within four months of receiving a complete demonstration package. Upon approval the facility may continue to operate the impoundment as long as the impoundment remains in detection monitoring. Upon detection of a statistically significant increase over background of a constituent listed in appendix A to rule 3745-525-900 of the Administrative Code, the facility shall proceed in accordance with the requirements of paragraph (D)(2)(i) of this rule.

(g) Facility operating record requirements. Upon receipt of the final decision on the alternative liner demonstration pursuant to paragraph (D)(2)(f) of this rule, the owner or operator shall place the final decision in the facility's operating record as required by paragraph (F)(20) of rule 3745-525-50 of the Administrative Code.

(h) Effect of demonstration denial. If Ohio EPA determines that the CCR surface impoundment's alternative liner does not meet the standard for approval in paragraph (D) of this rule, the owner or operator shall cease receipt



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of waste and initiate closure as determined in Ohio EPA's decision. If the owner or operator needs to obtain alternative capacity, they may do so in accordance with the procedures in rule 3745-535-730 of the Administrative Code. The owner or operator will have four months from the date of Ohio EPA's decision to apply for an alternative closure deadline under either paragraph (F)(1) or (F)(2) of rule 3745-525-730 of the Administrative Code, during which time the facility's deadline to cease receipt of waste will be tolled.

(i) Loss of authorization.

(i) The owner or operator of the CCR unit shall comply with all of the following upon determining that there is a statistically significant increase over background levels for one or more constituents listed in appendix A to rule 3745-525-900 of the Administrative Code pursuant to paragraph (E) of rule 3745-525-930 of the Administrative Code:

(a) In addition to the requirements specified in paragraph (D) of this rule, comply with the groundwater monitoring and corrective action procedures specified in rules 3745-525-900 to 3745-525-970 of the Administrative Code.

(b) Submit the notification required by paragraph (E)(3) of rule 3745-525-930 of the Administrative Code to Ohio EPA within fourteen days of placing the notification in the facility's operating record as required by paragraph (H)(5) of rule 3745-525-50 of the Administrative Code.

(c) Conduct intra-well analysis on each downgradient well to identify any trends of increasing concentrations as required by paragraph (D)(2)(i)(ii) of this rule. The owner and operator shall conduct the initial groundwater sampling and analysis for all constituents listed in appendix B to rule 3745-525-900 of the Administrative Code according to the timeframes specified in paragraph (B) of rule 3745-525-940 of the Administrative Code.

(d) The owner or operator may elect to pursue an alternative source demonstration pursuant to paragraph (E)(2) of rule 3745-525-930 of the Administrative Code that a source other than the CCR unit caused the contamination, or that the statistically significant increase resulted from error in sampling, analysis,



statistical evaluation, or natural variation in groundwater quality, provided that such alternative source demonstration shall be conducted simultaneously with the sampling and analysis required by paragraph (D)(2)(i)(i)(c) of this rule. If the owner or operator believes that a successful demonstration has been made, the demonstration shall be submitted to Ohio EPA for review and approval. The owner or operator shall place the demonstration in the facility's operating record within the deadlines specified in paragraph (E)(2) of rule 3745-525-930 of the Administrative Code and submit the demonstration to Ohio EPA within fourteen days of placing the demonstration in the facility's operating record.

- (e) The alternative source demonstration shall be posted to the facility's publicly accessible CCR internet site and submitted to Ohio EPA within fourteen days of completion. If the alternative source demonstration is approved, the owner or operator may cease conducting the trend analysis and return to detection monitoring. If the alternative source demonstration is denied, the owner or operator shall either complete the trend analysis or cease receipt of waste. Upon receipt of the final decision on the alternative source demonstration, the owner or operator shall place the final decision in the facility's operating record as required by paragraph (F)(22) of rule 3745-525-50 of the Administrative Code.

(ii) Trend analysis.

- (a) Except as provided for in paragraph (C) of rule 3745-525-940 of the Administrative Code, the owner or operator shall collect a minimum of four independent samples from each well (background and downgradient) on a quarterly basis within the first year of triggering assessment monitoring and analyze each sample for all constituents listed in appendix B to rule 3745-525-900 of the Administrative Code. Consistent with paragraph (B) of rule 3745-525-940 of the Administrative Code, the first samples shall be collected within ninety days of triggering assessment monitoring. After the initial year of sampling, the owner or operator shall then conduct sampling as prescribed in paragraph (D)(1) of rule 3745-525-940 of the Administrative Code. After each sampling event, the owner or operator shall update the trend analysis with the new sampling information.



- (b) The owner or operator of the CCR surface impoundment shall apply an appropriate statistical test to identify any trends of increasing concentrations within the monitoring data. For normally distributed datasets, linear regression will be used to identify trends and determine the associated magnitude. For non-normally distributed datasets, the Mann-Kendall test will be used to identify trends and the Theil-Sen trend line will be used to determine the associated magnitude. If a trend is identified, the owner or operator of the CCR surface impoundment will use the upper ninety-fifth percentile confidence limit on the trend line to estimate future concentrations. The owner or operator will project this trendline into the future for a duration set to the maximum number of years established in rule 3745-525-720 of the Administrative Code for closure of the surface impoundment.
- (c) A report of the results of each sampling event, as well as the final trend analysis, shall be posted to the facility's publicly accessible CCR internet site and submitted to Ohio EPA within fourteen days of completion. The trend analysis submitted to Ohio EPA shall include all data relied upon by the facility to support the analysis. If the trend analysis shows the potential for a future exceedance of a groundwater protection standard, before the closure deadlines established in rule 3745-525-720 of the Administrative Code, the CCR surface impoundment shall cease receipt of waste by the date provided in the notice.
- (iii) If the trend analysis demonstrates the presence of a statistically significant trend of increasing concentration for one or more constituents listed in appendix B to rule 3745-525-900 of the Administrative Code with potential to result in an exceedance of any groundwater protection standard before closure is complete, or if at any time one or more constituents listed in appendix B to rule 3745-525-900 of the Administrative Code are detected at a statistically significant level above a groundwater protection standard, the authorization will be withdrawn. Upon receipt of a decision that the alternative liner demonstration has been withdrawn, the owner or operator shall place the decision in the facility's operating record as required by paragraph (F)(24) of rule 3745-525-50 of the Administrative Code.
- (iv) The onus remains on the owner or operator of the CCR surface impoundment at all times to demonstrate that the CCR surface



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impoundment meets the conditions for authorization under this rule. If at any point, any condition for qualification under this rule has not been met, the director can without further notice or process deny or revoke the owner or operator's authorization under paragraph (D) (2)(i) of this rule.