



Division of Materials and Waste Management Response to Comments

Rule: Industrial or Manufacturing Waste Chapter, Ohio Administrative Code (OAC) Rules 3745-30-01 to 3745-30-15

Agency Contact for this Package

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Ohio EPA held a comment period regarding the combining of the Industrial Solid Waste and Residual Solid Waste programs [OAC Chapters 3745-29 and 3745-30, respectively] into an Industrial or Manufacturing Waste program. This document summarizes the comments and questions received during the comment period, which ended on January 21, 2020.

Ohio EPA reviewed and considered all comments received during the public comment period. By law, Ohio EPA has authority to consider specific issues related to protection of the environment and public health.

In an effort to help you review this document, the questions are grouped by rule and organized in a consistent format. The name of the commenter follows the comment in parentheses.

Comment 1: [General] The Ohio Manufacturer’s Association (OMA) supports Ohio EPA’s proposed amendments to Chapters 3745-29 and 3745-30, including Ohio EPA’s proposal to merge the Industrial Waste Program and Residual Waste Programs, whereby non-hazardous, non-municipal waste streams will be called “industrial or manufacturing waste” or IMW. The reduction of the existing residual waste program, which previously established four landfill classifications, will result in just two landfill classifications remaining. At this preliminary stage, OMA believes the approach to these updated classifications will allow for a more streamlined approach to the program. The OMA also concurs with the revisions proposed to provide clarity and consistency with other rules in Chapter 3745. (Rob Brundrett, Ohio Manufacturers’ Association)

Response 1: No changes were made in response to this comment.

Comment 2: [General] The Ohio Utilities & Generators (OUG) supports Ohio EPA’s effort to streamline Ohio’s rules regulating industrial monofills. However, the current proposal needs further expansion. As OUG has continually commented since 2015, Ohio’s existing RSW rules are duplicative and unnecessary for coal combustion solid waste disposal units since US EPA adopted the CCR rules for coal combustion residuals. Ohio EPA should take this opportunity to address CCR regulated sources in the Ohio program. (Michael Born, Shumaker, Loop & Kendrick)

Response 2: DMWM has met with US EPA to discuss obtaining primacy for the CCR program. One approach was for partial approval to adopt a ground water monitoring program and the other explored adoption of a separate CCR program. In both cases US EPA declined to accept DMWM's proposal and advised DMWM to wait until outstanding issues with the federal program were resolved. No changes were made in response to this comment.

Please note that the ground water parameter list for coal combustion residuals is include with this package to add the CCR parameters absent from the existing rule.

Comment 3: **[3745-30-06(H)(4)(c)] Is it correct that the general setback from domiciles only applies to “commercial” pulp and papermaking waste landfills, but does not apply to any other “captive” industrial or residual waste landfills? (Robert Schmude, Ineos)**

Response 3: The commenter is correct in their understanding of the rule. No changes were necessary in response to this comment.

Comment 4: **[3745-30-07(B)(8) and 3745-30-14(M)(7)] These rules require cost of constructing the liner or cap system and the environmental monitoring and controls, respectively. We believe this may be impractical because, 1) Many of these services are competitively bid, and submitting that cost information to Ohio EPA would reveal competitive information. This is especially true given the very small number of companies that perform landfill construction and monitoring services in Ohio. 2) It is highly probable that if this requirement stands, Ohio EPA will not get information from owner/operators that is comparable between sites without specific and well thought out guidance or forms, and since companies often use differing bidding and contracting formats and methodologies, the information still may be incomparable. 3) Many owners/operators will consider the information proprietary, and that adds an administrative burden to both the owners/operators and Ohio EPA to prepare the formal requests and get approval or appeal denials.**

In the past, owner/operators have worked with Ohio EPA when its staff needed recent and reliable cost information for projects and evaluations. We believe that this informal process, coupled with the itemized closure/post-closure estimates that are required to be submitted with closure plans, will serve both the regulators and industry needs more effectively than a requirement to submit the cost. (Robert Schmude, Ineos)

Response 4: In response to the comment, the rule was changed to delete the requirements.

Comment 5: **[3745-30-07(D)(6)(h)] The requirement to place a 16-oz/sy protective cushion placed where there are any particles protruding more than ¼-inch is extremely costly and may be inconsistent with many previously approved quality control and assurance plans, especially in light of the maximum particle size of 2-inches allowed in the draft rule and the allowable 0.75-inch particle component of 10% by weight. Our concerns with the practicality of the cushion layer requirement includes the following:**

Inclusion of the cushion layer would cause another interface layer that may in many, if not most, facilities reduce the stability compared to an intimate contact interface between the RSL/RSB and the FML, especially when using a textured FML.

The cushion layer, as written, would add perhaps tens of thousands of dollars per acre, not including having to re-evaluate stability and then prepare resultant design changes for Ohio EPA approval.

We also see a potential for the requirement for the 16-oz/sy cushion layer to be inconsistently applied. All facilities use dissimilar RSL and RSB materials as the geology changes throughout the state. Site-specific techniques to avoid penetrations of the FML are more applicable and are already part of the CQA plan approvals by Ohio EPA.

Composite lining systems have now been required in Ohio for 30-years. Adding a requirement for this cushion layer should necessarily logically be subject to justification and risk assessment. Please provide a summary or discussion of the case histories of failures that the cushion layer is designed to avoid, and the cost-benefit evaluation. (Robert Schmude, Ineos)

Response 5: Current residual and industrial waste regulations include a cushion layer requirement. The purpose of the cushion layer is to protect the flexible membrane liner (FML) from damage due to protruding particles in the drainage layer (e.g. gravel) and from construction activities. A study by Abdelaal, Rowe, and Brachman titled "Brittle rupture of an aged HPDE geomembrane at local gravel indentations under simulated field conditions" indicates that FML can experience long-term ruptures due to strain developed at gravel indentations. The capping option for low permeability waste allows FML to be placed above waste, without a soil barrier layer, so the applicability of the cushion layer requirements was expanded to address potential damage due to protruding particles in the waste. The material quality of recompacted clay liner and recompacted soil barrier layer is such that a cushion layer between these components and the FML has not been required.

In response to the comment, the 16 oz/sy specification was eliminated. The required thickness will now be whatever thickness is necessary to protect the flexible membrane liner from damage.

Comment 6: [3745-30-07(H)(4)(d and e)] Electrical leak detection is to be performed on 100 percent of the FML after placement, and then again after placement of the first lift of the next layer above. Landfills in Ohio have been required to install composite lining systems with FML's for 30-years. Similar to our comments on the cushion layer, this requirement adds many thousands of dollars per acre. The extra cost, construction time, and efforts to chase false positives should logically be in response to an identified and defined problem and subject to a cost-benefit analysis. Please provide a summary of any case histories of failures that this requirement is designed to resolve, and a cost-benefit analysis if one has been performed. (Robert Schmude, Ineos)

Response 6: In response to the comment, the rule was revised to require one electrical leak location (ELL) survey. Testing will be required to be conducted after installation of the leachate

collection system (i.e. after initial backfilling). DMWM is aware that the ELL test may not be able to be successfully performed or may cause damage that could go undetected if scrap tires are used as part of the leachate collection system or if construction is staged going up-slope. In such instances, ELL testing can be done prior to initial backfilling.

DMWM's preference for conducting ELL testing after initial backfilling is based on studies conducted on double lined landfills. The likelihood of leakage through a liner system exceeding a leakage rate of 5 gpad are as follows (Beck 2015):

- 69% if ELL testing is not done
- 51% if ELL testing is done on top of the drainage layer
- 12% if ELL testing is done on top of the flexible membrane liner (FML) and on top of the drainage layer

DMWM also received data from a commenter responding to a similar rule drafted for the municipal solid waste program that detailed four impoundments constructed in Arizona. This was described as a high profile job where the owner made their expectations clear to the installer, the installer was very good and took more care than typically seen, and the quality assurance team was good, properly trained, and had multiple personnel on the geosynthetics the entire time. So, while there was a tremendous effort on everyone's part, leaks were found prior to backfilling using ELL testing that were missed using conventional methods. The commenter noted more leaks are likely if the Construction Quality Assurance effort is reduced/lacks training, and the installer is less skilled or concerned. DMWM has been informed that the cost of mobilizing and conducting a survey on 5 acres is approximately \$12,000.

Arizona Project - 60 mil White HDPE Conductive Spark Test Results

Project	Secondary Containment		Primary Containment	
	Area (SF)	Leaks	Area (SF)	Leaks
1	2,758,178	8	2,406,562	5
2	4,084,289	9	3,466,262	5
3	3,729,399	5	3,566,005	9
4	1,462,965	5	1,311,403	0

ELL testing on top of FML that is in direct contact with recompacted soil liner (RSL) or geosynthetic clay liner (GCL) routinely finds holes in FML that are 1/16th of an inch. ELL testing on top of drainage layer routinely finds holes in FML that are 1/4th of an inch in areas where the FML is in direct contact with RSL or GCL. Much research over the last few decades has gone into determining the most likely source for leakage through landfill liners. This research has concluded that most leakage is through holes located on wrinkles in the FML. A one centimeter hole in an FML that is in direct contact with a RSL would have a leakage rate of approximately 0.003 gallons per day (gpd), but the same size hole on a 400 foot long wrinkle would have leakage rate of approximately 35 gpd (assuming 7 inches of head). Studies have also shown that wrinkles will remain in place after waste placement. With the enhanced wrinkle management requirements also proposed in this rule package, the probability of holes on encapsulated wrinkles will be reduced.

Comment 7: [3745-30-08(D)(9)(b)] We respectfully request that Ohio EPA reconsider this language. Unless we have read it wrong, if an owner/operator submits an

alternate source demonstration for the director's consideration, he must begin assessment activities in accordance with paragraph (E) while he awaits the director's determination. We do not believe that this is the intent when there may be time remaining in the activities specified in (D)(8 through 12). (Robert Schmude, Ineos)

Response 7: In response to the comment, the rule was revised to specify which detection monitoring specifications under paragraph (D) the owner or operator will be required to follow while waiting for a response from Ohio EPA and which specifications to follow if Ohio EPA does not agree with the demonstration. The rule no longer cites the assessment monitoring paragraph (E).

Comment 8: [3745-30-09] Could Ohio EPA provide an appendix with the acceptable cap designs as they included for acceptable liner designs in draft OAC 3745-30-07? (Robert Schmude, Ineos)

Response 8: In response to the comment, the rule was revised to include an appendix of the cap designs.

Comment 9: [3745-30-14(D)] For the select waste layer, we respectfully request that Ohio EPA provide language akin to "unless alternate materials and methods are acceptable to the director" or an equivalent. Some IMW facilities, especially captive ones, may have approved select waste layers (materials or placement methodologies) that may not meet the placement requirements specified, but were previously approved by Ohio EPA and still applicable. The configurations of cells may also not allow (physically or with regard to stability) for placement of an entire 5-foot at the edge of a newly constructed cell if it abuts a future cell or if it is at the perimeter limits of solid waste placement. We believe the intent of the generic select waste placement is more applicable to MSW and C&DD landfills, and IMW landfills should be more site-specific than the generic language in the draft rule. (Robert Schmude, Ineos)

Response 9: The select waste layer is an existing requirement in the industrial solid waste program. Facilities with existing approvals for select waste layers can continue to operate under those authorizations.

It is not possible to place a select waste layer that meets the minimum thickness established in this rule at the perimeter limits of solid waste placement where the cap and liner meet. Since there is generally no waste placement in that narrow wedge, so the deficient thickness would be of no consequence. Some facility operators have opted to use soil in that wedge area and lay a berm of soil to account for the lack of thickness between two cells. This provides frost and solar protection to the exposed engineered components and contains the waste and leachate.

In response to the comment, the thickness of the select waste layer was revised in rule to range between a minimum of two feet and a maximum of twice the length of the largest general waste item. The thickness of any aggregate layer above the liner is credited towards the thickness of the select waste layer.

Additional changes: In addition to the comments received on this package, comments were received on an update to municipal solid waste landfill rules containing the same language. Changes made in response to comments and other adjustments made on the municipal solid waste landfill rules were also incorporated into this package. A summary of these changes are as follows:

3745-30-05	<ul style="list-style-type: none"> • Minor wording clarifications throughout. • A specification that seepage piping failure calculations are required only when the piezometric surface is above the subject layer. • Addition of a calculation to show the cushion layer will still protect the flexible membrane liner under the weight of the waste mass.
3745-30-06	<ul style="list-style-type: none"> • Clarification that 'recreation area' is a national recreation area.
3745-30-07	<ul style="list-style-type: none"> • Minor wording clarifications throughout. • A specification that seismic stability analysis can meet either a factor of safety or a deformation limit. • A specification that seepage piping failure calculations are required only when the piezometric surface is above the subject layer. • For added geologic material, a specification that permeability is required only for pre-construction testing and that the list of materials that can be accepted without needing permeability testing was expanded. Grain size distribution testing was added. • Revisions to the lift thickness for subbase under a geosynthetic clay liner from twelve inches to eight inches. • The addition of a requirement that geosynthetic clay liner needs to be protected from desiccation and erosion. • Streamlining of the qualifications for flexible membrane liner installers. • The addition of a requirement that the cushion layer needs to be protected from solar degradation and the deletion of instructions if scrap tires are used as drainage material (rather than incorporating current guidance into rule). • Revisions to the cap protection layer permeability requirement. • Streamlining of the requirements for a ground water infiltration pumping system.
3745-30-09	<ul style="list-style-type: none"> • Instead of specifying which parts of the closure/post-closure plan are required to be prepared by a professional engineer, the requirement was moved to the plan's general instructions.
3745-30-10	<ul style="list-style-type: none"> • Minor wording clarifications throughout. • Streamlining of the requirement for continuing operation and maintenance of the leachate collection system.

End of Response to Comments

