GENERAL PERMIT AUTHORIZATION TO BENEFICIALLY USE ALUMINUM-BASED DRINKING WATER TREATMENT RESIDUALS IN A SOIL BLEND

Upon receipt of written notification from the Director of the Ohio Environmental Protection Agency (Director) that coverage is granted, the Permittee, as defined in Section B of this Permit, is authorized by the Director to beneficially use aluminum-based drinking water treatment residuals (alum residuals) in accordance with the conditions specified in this Permit and applicable provisions of OAC Chapter 3745-599. Only alum residuals as defined in Section B of this Permit and as identified in the Applicant’s Notice of Intent (NOI) are authorized for beneficial use by placement on land for agronomic benefit as an ingredient in a soil blend and as an ingredient in bioretention soils under this Permit. All other beneficial uses of alum residuals must be separately approved by the Director.

Alum (aluminum sulfate) or poly-aluminum chloride are coagulants often used by public water systems to aid in removal of particulate and dissolved constituents from raw water intake. The resulting byproduct is aluminum containing drinking water treatment residuals. Due to the moisture retention and soil-like properties of the material, alum residuals can be beneficially used by placement on land for agronomic benefit as an ingredient in a soil blend.

Coverage under this Permit may be authorized only upon payment of applicable fees and the submittal of a complete and accurate NOI, a sampling plan, and an analysis demonstrating the alum residuals are eligible for beneficial use under this Permit, in accordance with the terms and conditions of this Permit. Permit coverage does not become effective until the Permittee receives a written notification from the Director that coverage is authorized.

Coverage under this Permit shall expire at midnight on this Permit’s expiration date. A Permittee may continue activities authorized by this Permit beyond the date of expiration only as provided in OAC Rule 3745-599-220(G).

Pursuant to the authority of the Director under Ohio Revised Code (ORC) Chapters 6111 and 3734 and OAC Chapter 3745-599, any coverage granted under this Permit is subject to compliance with applicable provisions of OAC Chapter 3745-599 and all terms and conditions contained within this Permit. The Permittee’s beneficial use of alum residuals in accordance with this Permit and in compliance with OAC Chapter 3745-599 and other applicable laws is unlikely to adversely impact the public health or safety or the environment.

Coverage under this Permit does not relieve the Permittee of the duty to comply with all applicable federal, state, and local laws, ordinances, and regulations. Nothing herein shall be construed to release any party, including but not limited to the owner(s) of the land upon which the alum residuals are placed, from the obligation to comply with all applicable laws governing the placement or use of the alum residuals on the property.

Craig W. Butler
Terms and Conditions

A. Description and Eligibility Criteria for Coverage

1. This permit authorizes the beneficial use of alum residuals by placement on the land for agronomic benefit as an ingredient in a soil blend and as an ingredient in soils used for bioretention practices, only as described in this Permit and does not authorize the beneficial use of alum residuals as fill.

2. Only alum residuals that meet all of the following criteria are eligible for beneficial use under this Permit:
   a. The material conforms to the definition of “alum residuals” as defined in Section B of this permit;
   b. The material does not contain constituents that exceed any of the limits specified in Table 1 of this Permit (Table 1);
   c. The alum residuals are not a hazardous waste as defined by ORC Chapter 3734.01, OAC Rule 3745-50-10(A), and OAC Rule 3745-51-03.

3. For the purposes of this Permit, alum residuals that satisfy the constituent concentration limits set forth in Table 1 of this Permit are a beneficial use byproduct as defined in OAC Rule 3745-599-02(B)(2).

4. Alum residuals generated by a drinking water treatment facility that has detected microcystins in its raw intake water since the last removal of alum residuals from the lagoon in which the alum residuals to be beneficially used are stored, are not eligible for beneficial use under this Permit.

5. An applicant may apply for another General Permit in accordance with OAC Rule 3745-599-200 or an individual beneficial use permit in accordance with OAC Rule 3745-599-310 for beneficial use of alum residuals not eligible for coverage under this General Permit.

B. Definitions

Unless otherwise stated in this Permit, the terms used in this Permit shall have the same meaning as used in OAC Chapter 3745-599. The following definitions are specific to this Permit.

“Agronomic benefit” means the promotion or enhancement of plant growth and includes but is not limited to increases in soil fertility and moisture retention.

“Aluminum-based drinking water treatment residuals” or “alum residuals” means a dewatered byproduct resulting from the treatment of a source water supply for drinking water by the addition of aluminum sulfate or poly-aluminum chloride for coagulation.

“Applicant” means the person applying for coverage under this Permit.
“Bioretention practices”¹ means methods employed to treat runoff and improve water quality for small drainage areas. Bioretention practices include the use of storm water basins that utilize a soil media, and vegetation. These practices are applicable in areas such as roadways, commercial areas, parking areas, cul-de-sacs, or parking lot islands.

“Bioretention soil”¹ means a soil blend made up of alum residuals, sand, soil, and leaf compost with specific performance criteria that include high percolation rates to prevent surface ponding, large capacity to sequester pollutants as water percolates through, and supports the growth of plant populations. Bioretention Soils shall not contain more than fifty percent alum residuals by volume. Bioretention soils are nonputrescible, have good cohesiveness, and are relatively uniform in texture. Bioretention soils do not include soils that contain or are comingled with solid waste, construction and demolition debris, pulverized debris, sludge, slag, unfinished compost, or contaminated soil.

“Cyanobacteria” means photosynthesizing bacteria, also called blue-green algae, which naturally occur in marine and fresh water ecosystems, and may produce cyanotoxins which at sufficiently high concentrations can pose a risk to public health.

“Cyanotoxin” means a toxin (such as microcystin) produced by cyanobacteria, which include liver toxins, nerve toxins and skin toxins.

“Dewatered” means a material with a moisture content not greater than twenty-five percent by weight. If the moisture content exceeds twenty-five percent by weight, the material must be dried to a moisture content of twenty-five percent.

“Microcystins” means total microcystins: the combination of all the variants of the cyanotoxin microcystin, which is produced by a number of cyanobacteria.

“Notice of Intent” (NOI) means the form prescribed by the Director for use when requesting coverage under a beneficial use general permit.

“Permittee” means an applicant for whom the Director has approved coverage under this Permit.

“Soil blend” means a mixture of soil and alum residuals that does not exceed fifty percent alum residuals by volume. Soil blends shall not include nor be comingled with solid waste, construction and demolition debris, pulverized debris, sludge, slag, unfinished compost, or contaminated soil. Soil blends are nonputrescible, cohesive, and relatively uniform in texture.

C. Application Requirements

1. Prior to submission of an NOI, the Applicant shall develop and implement a sampling plan in accordance with Section C.4, determine the concentration of the constituents listed in Table 1 (sample analysis), and the pH, and perform a statistical evaluation of the sampling analysis, for the alum residuals from each generator from which the Applicant intends to obtain alum residuals for beneficial use under this Permit.

2. To obtain coverage under this Permit, an Applicant shall, in accordance with OAC Rule 3745-599-210, submit an application package to the Director containing the following:

   a. One copy of a complete and accurate NOI on a form provided by the Director, including a demonstration that the Applicant satisfies all of the Eligibility Criteria for Coverage in Section A of this Permit. Each NOI form shall be signed by the Applicant;

   b. The sampling plan developed and implemented in accordance with Section C.4 for the alum residuals from each generator from which the Applicant intends to obtain alum residuals for beneficial use under this Permit; and

   c. The results of the sampling analysis and the statistical evaluation of the sampling analysis performed in accordance with the sampling plan for the alum residuals from each generator from which the Applicant intends to obtain alum residuals for beneficial use; and

   d. The application fee of $200.

3. The application package shall be submitted to the following address:

   Ohio Environmental Protection Agency  
   Division of Materials and Waste Management  
   Attn: Beneficial Use Unit  
   P.O. Box 1049  
   Columbus, Ohio 43216-1049

4. The sampling plan shall at a minimum contain the following:

   a. Samples of alum residuals from each generator shall be collected using a strategy to obtain representative samples as described in Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW 846)\(^2\). The samples from each generator shall be separately analyzed.

   b. Each sample shall be analyzed for pH and for total metals as described in SW 846 for the constituents listed in Table 1.

   c. The sample result for each constituent shall be included in a statistical evaluation. In order to be eligible for beneficial use under this Permit, the Applicant shall demonstrate that the 95% Upper Confidence Limit (UCL) of the mean for each constituent in the alum residuals does not exceed the limits specified in Table 1.

Table 1

<table>
<thead>
<tr>
<th>Constituent(^3,4)</th>
<th>Totals Analysis (mg/kg)(^*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum(^5)</td>
<td>77000</td>
</tr>
<tr>
<td>Arsenic (As)</td>
<td>41</td>
</tr>
<tr>
<td>Barium (Ba)</td>
<td>15000</td>
</tr>
<tr>
<td>Cadmium (Cd)</td>
<td>39</td>
</tr>
<tr>
<td>Copper (Cu)</td>
<td>1500</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>300</td>
</tr>
<tr>
<td>Manganese (Mn)</td>
<td>1800</td>
</tr>
<tr>
<td>Nickel (Ni)</td>
<td>420</td>
</tr>
<tr>
<td>Selenium (Se)</td>
<td>100</td>
</tr>
<tr>
<td>Zinc (Zn)</td>
<td>2800</td>
</tr>
</tbody>
</table>

\(^*\) - dry weight basis

5. Coverage under this Permit becomes effective when the Applicant receives written notification from the Director that coverage is granted. The Permittee shall conduct all activities authorized by this Permit in accordance with this Permit, the NOI, and OAC Chapter 3745-599.

D. Operating Conditions

1. The Permittee shall beneficially use alum residuals by placement on the land for agronomic benefit as an ingredient in a soil blend or as an ingredient in bioretention soils, in strict accordance with the terms and conditions in this Permit. Approval of this Permit does not constitute assurance that the beneficial use of alum residuals by placement on the land for agronomic benefit as an ingredient in a soil blend will comply with all Ohio laws and regulations.

2. When there is a change in the generating process, the Permittee shall determine constituent concentrations listed in Table 1 through additional sampling and analysis, performed in accordance with the sampling plan developed pursuant to Section C.4. of this Permit, and demonstrate through a statistical evaluation of the sampling analysis that the 95% UCL of the mean for each constituent does not exceed the limits specified in Table 1.

3. The Permittee shall cease beneficial use of the alum residuals from any drinking water treatment facility pursuant to this Permit if it is determined that the alum residuals no longer satisfy the Eligibility Criteria for Coverage in Section A of this Permit.

\(^3\) Al, Ba, Mn: US EPA Regional Screening Levels, Residential Soil.

\(^4\) As, Cd, Cu, Pb, Ni, Se, Zn: US EPA 40 CFR Part 503 Pollutant Concentrations (Table 3 of 503.13)

\(^5\) With aluminum concentrations exceeding 50,000 mg/kg, special care may be needed to prevent plant phosphorus deficiency. “High aluminum” materials should be considered for phosphorus sorption rather than soil blending. (Dayton, 2016)
4. After coverage under this Permit is granted, the Permittee shall provide to the Director an NOI and analytical results of the alum residuals for any additional generators from which alum residuals are to be obtained for beneficial use.

5. The Permittee shall retain the following information for a minimum of five years after beneficial use of the alum residuals under this Permit has occurred and the Permittee shall make the information available to the Director or an authorized representative of Ohio EPA upon request:
   a. Records of the name, address, and telephone number of each generator;
   b. The annual volume of alum residuals from each generator managed, and the volume of alum residuals from each generator actually beneficially used annually;
   c. Records of the location(s) where the alum residuals are stored, blended, or placed on land by the Permittee;
   d. The sampling plan detailing where and how samples of alum residuals from each generator were collected, dates that the annual samples were collected, and the list of constituents for which samples were analyzed;
   e. All laboratory analyses of the constituent concentrations in the alum residuals.

6. Not later than April first of each year the Permittee shall submit to Ohio EPA an annual report. The annual report shall be sent to the following address:

   Ohio Environmental Protection Agency
   Division of Materials and Waste Management
   Attn: Beneficial Use Unit
   PO Box 1049
   Columbus, OH 43216-1049

7. The annual report shall include the following information for the previous calendar year:
   a. Volume of alum residuals beneficially used under this Permit;
   b. Volume of alum residuals stored for beneficial use under this Permit as of the date of the annual report;
   c. Sampling analyses and results of alum residuals beneficially used under this Permit.

8. The Permittee shall use Best Management Practices, as defined in OAC Rule 3745-599-02, when storing, blending and beneficially using alum residuals pursuant to this Permit. The Best Management Practices shall include, at a minimum, the following:
   a. Storage, blending, and beneficial use that occurs at locations other than the drinking water treatment facility shall be at least 300 feet from wells and surface waters used for drinking water or watering livestock;
b. Storage, blending, and beneficial use that occurs at locations other than the drinking water treatment facility shall be at least 33 feet from other surface waters of the state as defined in ORC Section 6111.01(H);

c. Unless otherwise provided in a permit issued under ORC Chapter 6111, the Permittee shall create surface diversions to catch any solids in runoff or to divert runoff away from waters of the state at each site where alum residuals are placed on land;

d. Section D Conditions 7.a, b, and e do not apply to alum residuals beneficially used as soils in bioretention practices if the alum residuals do not exceed the constituent limits specified in Table 1.

e. Storage and blending of alum residuals shall not occur within 1,000 feet of a sensitive groundwater area, including:

   i. Karst terrain;

   ii. A sand and gravel pit;

   iii. A limestone or sandstone quarry;

   iv. A drinking water source protection area with less than ten feet of low permeability clay rich glacial till between the bottom of the fill material and the groundwater;

   v. An aquifer designated on an Ohio Department of Natural Resources Ground Water Resources map for the county in which the beneficial use activity will take place as capable of yielding one hundred gallons-per-minute or more, which has less than ten feet of separation between the bottom of the fill material and the groundwater.

f. The Permittee shall take measures to control fugitive dust and other air emissions that may result from activities authorized through this Permit.

9. The Permittee may establish a blending area to perform blending in a designated area separate from the intended beneficial use location in order to import and dry the alum residuals, and mix with soil prior to beneficial use and prior to final placement. The Permittee shall provide prior notice on a plan view drawing to the Director of the designated blending area. The Permittee shall obtain a permit to install or other applicable permit prior to establishing a separate blending area if required.

10. The Permittee shall store, blend, and beneficially use alum residuals pursuant to this Permit in such a manner that the activities will neither cause a nuisance nor adversely affect public health, safety or the environment. The Director may revoke coverage under this Permit if the Director determines that a nuisance condition or a threat to public health, safety or the environment exists. Immediately upon the effective date of any written notification from the Director of revocation of coverage under this Permit, the Permittee shall cease beneficial use under this Permit. The Director may require the Permittee to remove the material, remediate the site, or to take other action as appropriate to eliminate the nuisance or threat.
11. For each drinking water treatment facility from which the Permittee obtains alum residuals for beneficial use under this Permit, the Permittee shall obtain and review the results for total microcystins in the raw intake water for the time period when alum residuals were placed in the lagoon or containment area (the date between when the alum residuals were previously removed and the date when alum residuals were last placed). The Permittee shall obtain these analytical results from the drinking water treatment facility.

12. The Permittee shall cease beneficial use of alum residuals from a drinking water treatment facility upon obtaining information showing that, after the Permittee’s receipt of coverage under this Permit, the drinking water treatment facility detected microcystins in its raw intake water.

13. The Permittee shall conduct all activities in compliance with all applicable local, state and federal laws and regulations pertaining to environmental protection, including but not limited to the control of air pollution, leachate, and surface water run-on and run-off, and protection of ground water and surface water.

14. The Permittee shall conduct all activities in compliance with all other applicable local, state, and federal laws and regulations not explicitly identified in this Permit.

15. To the extent that the alum residuals may be considered a solid waste and would require the Permittee to obtain a permit and license under ORC Chapter 3734 and the rules promulgated thereunder, the Director has determined that granting an exemption from the applicable solid waste provisions of ORC Chapter 3734 to use alum residuals in the quantities and under the circumstances specifically authorized in this Permit is unlikely to adversely affect public health or safety or the environment. Therefore, pursuant to ORC Section 3734.02(G), the Permittee is hereby exempted from the applicable solid waste provisions of ORC Chapter 3734 and the rules adopted thereunder when the alum residuals are managed as authorized in this Permit subject to compliance with all conditions in this Permit.

16. Nothing in this Permit shall be construed as a waiver from the requirements of ORC Chapter 3734, or the regulations promulgated thereunder, except as expressly provided herein. This Permit shall not be interpreted to release the Permittee from responsibility under ORC Chapters 3704., 3734., or 6111.; under the Federal Clean Water Act, the Resource Conservation and Recovery Act, or the Comprehensive Environmental Response, Compensation, and Liability Act; or from other applicable requirements for remedying conditions resulting from any release of contaminants to the environment.

17. The Permittee shall not cause pollution or cause to be placed any alum residuals that have been or are intended to be used in a soil blend in a location where they cause pollution to waters of the state except in accordance with an effective National Pollutant Discharge Elimination System (NPDES) permit. Any unauthorized discharge to waters of the state must be reported to Ohio EPA (call 1-800-282-9378) within twenty-four (24) hours of discovery.

18. The Permittee shall furnish to the Director or an authorized representative of Ohio EPA, within 30 days of receiving a written request, any information that the Director or an authorized representative of Ohio EPA requests to determine whether cause exists for revoking coverage under or determining compliance with this Permit.
19. When the Permittee becomes aware of new relevant information, or that relevant facts were omitted or that incorrect information was included in the NOI to the Director, the Permittee shall promptly submit such facts or correct such information.

20. The Permittee shall comply with OAC Rules 3745-599-05 (general exclusions), 3745-599-20 (prohibitions), 3745-599-25 (signatures), 3745-599-35 (legitimacy criteria), 3745-599-60 (approved sampling and characterization procedures), 3745-599-210 (notice of intent to obtain coverage under a general beneficial use permit), and 3745-599-220 (coverage under a general beneficial use permit). If there is a conflict between a requirement in a rule and a condition of this Permit that cannot be reconciled, the Permittee shall notify the Director in writing of the conflict and shall comply with the Permit condition unless directed otherwise by the Director.

E. Site Access

The Permittee shall allow the Director or an authorized representative of Ohio EPA to:

1. Enter upon the site where a regulated facility or activity is located or conducted or where records are retained by the Permittee under OAC Chapter 3745-599 or the terms and conditions of this Permit.

2. Have access to and copy any records that must be kept under OAC Chapter 3745-599 or the terms and conditions of this Permit.

3. Collect samples; take photographs; perform measurements, surveys, and other tests; and inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under OAC Chapter 3745-599 or this Permit.

F. Revocation of Coverage

The Director may revoke coverage under this Permit upon making a determination that any of the Eligibility Criteria for Coverage are no longer satisfied, that the Permittee has failed to comply with this Permit or OAC Chapter 3745-599, or as otherwise provided in accordance with OAC Rule 3745-599-220.

Literature Cited