

VIRGINIA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES

GUIDELINES FOR APPROVING INDUSTRIAL CO-PRODUCTS FOR AGRICULTURAL USE UNDER THE VIRGINIA FERTILIZER AND AGRICULTURAL LIMING MATERIALS LAWS

PURPOSE

The Virginia Department of Agriculture and Consumer Services (VDACS) recognized in 1991 that many industries were interested in identifying agricultural uses for waste products and process residuals, including coal combustion products (CCPs), paper mill sludge, wood ash, kiln dust, tobacco dust and foundry sand, that chemically contained plant nutrients. In 1994, the Virginia Fertilizer Law and Agricultural Liming Materials Law were amended to allow waste products, referred to as industrial co-products, to be used as a fertilizer, soil amendment, horticultural growing medium or liming material. Businesses were required to demonstrate that these waste products provided a clearly observable benefit to plants and/or soils, were safe to use and apply, and met the definition and criteria for one of these regulated products as defined in the Virginia Fertilizer and Agricultural Liming Materials laws. Currently, industrial co-products may include, but are not limited to coal combustion products (CCP), exceptional quality biosolids (wastewater sewage sludge), and other organic and inorganic matrices.

The VDACS Office of Plant Industry Services (OPIS), in cooperation with environmental scientists at Virginia Polytechnic Institute and State University (VPI&SU) developed a set of guidelines to assist those businesses requesting approval to distribute an industrial co-product in the Commonwealth for agricultural use. These guidelines establish the data development requirements necessary for VDACS to complete the review, approval and registration of waste products prior to their commercial distribution in the Commonwealth.

REQUIREMENTS OF THE LAWS

The following sections of the Virginia Fertilizer Law, Virginia Agricultural Liming Materials Law and regulations promulgated under these laws describe the authority by which VDACS can request and review additional data before allowing an industrial co-product to be registered and distributed in the Commonwealth.

§3.2-3613.A.1. of the Virginia Fertilizer Law prohibits distribution of any regulated product if it contains any deleterious or harmful ingredient, in sufficient amount to render it injurious to beneficial plant life, when applied in accordance with directions for use on the label.

§3.2-3715.A.2 of the Agricultural Liming Materials Law states that it is unlawful to sell or offer for sale in the Commonwealth any liming material which contains toxic materials in quantities injurious to plants or animals.

§3.2-3607.D. of the Fertilizer Law states, "The commissioner may require verification of any labeling claims for any regulated product."

Section C.3 of 2VAC5-400-30 "Rules and Regulations for the Enforcement of the Virginia Fertilizer Law" states that the Commissioner may require proof of any claims made for any soil amendment or one of its labeled ingredients. If no claims are made, the Commissioner may require proof of usefulness and value. For evidence of proof, the commissioner may rely on experimental data, evaluations, or advice from such sources as the extension service of VPI&SU and the Virginia State University.

GUIDELINES FOR APPROVAL

Any person requesting approval of an industrial co-product to be used as a regulated product under the requirements of the Virginia Fertilizer Law or the Virginia Agricultural Liming Materials Law shall, at the request of the Commissioner of the Virginia Department of Agriculture and Consumer Services, provide product data as outlined in the following four steps. Product data shall be used to assess the product's benefit and potential deleterious effects necessary to allow any product to be distributed in the Commonwealth:

1. Initial characterization demonstrating the waste product (i) is non-toxic and non-hazardous with respect to EPA's Resource Conservation and Recovery Act (RCRA) subtitle C criteria via the appropriate tests and (ii) provides a defined benefit as a reusable product as required for "delisting" by the Virginia Department of Environmental Quality (DEQ) as a regulated solid waste.
2. A complete chemical, physical, mineralogical analysis (as appropriate) of the product, conducted by an independent laboratory recognized and approved by the Commissioner (Appendix A).
3. Greenhouse pot studies of the product utilizing soil and plant materials from the proposed utilization area, conducted by or under the direction of an independent research facility (such as a land grant university) which is recognized and approved by the Commissioner.
4. Outdoor field trials to confirm the actual effectiveness of the product on soil properties, plant growth, and leachate quality. The field trials shall be run for a minimum of one full growing season and shall be conducted by or under the direction of an independent research facility (such as a land grant university) which is recognized and approved by the Commissioner.

At the conclusion of each step, the person or their agent requesting the product for approval shall submit the data to the Commissioner for evaluation. The Commissioner may approve or disapprove any product for use during this evaluation step or approve the product to enter the next step of data development. The Commissioner may waive the requirement for any data development step if he believes it is not necessary based on data previously developed for similar products or is in the best interest of agriculture.

The Commissioner may rely on outside sources such as but not limited to, research agronomists, crop and soil scientists, the Virginia Cooperative Extension Service, the Virginia Experiment Station of Virginia Polytechnic Institute and State University or the Virginia State University for assistance and advice in evaluating data submitted.

APPROVAL PROCESS FOR INDUSTRIAL CO-PRODUCTS

The following summarizes the steps in the process for data submission, review, approval and registration of an industrial co-product prior to distribution of the waste product within the Commonwealth:

- 1) Any company requesting approval for distribution of an industrial co-product in the Commonwealth must submit to VDACS a written request which includes:
 - a. Description of the product and the waste source/manufacturing process from which it is derived, and
 - b. Intended use of the product and the potential sites, soil types and agricultural crops on which the waste product is anticipated to be applied and anticipated rates and frequency of application to a site, and

- c. Initial characterization demonstrating the waste product is non-toxic and non-hazardous with respect to RCRA subtitle C criteria via the appropriate tests as necessary.
- 2) Upon review and approval of the request, the company shall submit data on the baseline characteristic (chemical, physical, mineralogical analysis, as appropriate) of the product, completed by an independent laboratory.
- 3) Upon review of the baseline analysis of the waste product, a company may be required to complete and submit greenhouse pot studies for review.
- 4) Upon review of the completed greenhouse pot studies, if required, a company may be required to conduct outdoor field trials of the waste product and submit the additional data and results for evaluation.
- 5) All product data are reviewed by third party experts and recommendations forwarded to VDACS.
- 6) If a waste product is approved, VDACS works with the company to develop a product label that may include a guaranteed analysis plus any needed cautions, restrictions (i.e. application rates, frequency of applications, site restrictions), and directions for use, based on the results of the analysis.
- 7) VDACS in conjunction with company representatives and third party experts will determine the extent and frequency of future testing of the product to be submitted to VDACS.
- 8) VDACS will provide assistance to the company to ensure they become licensed, the product registered and any inspections fees are met as required by law.
- 9) VDACS Agricultural Inspectors shall obtain periodic official samples of any approved waste product being distributed in the Commonwealth for analysis by the Division of Consolidated Laboratories (DCLS).

APPENDIX A

Baseline Characterization

The following is a brief summary of the tests required for review and determination of an industrial co-product as a fertilizer, soil amendment, horticultural growing medium or liming material before the product may be registered and distributed within the Commonwealth. However, based on the uniqueness of the waste and the extent to which the relevant properties and characteristics of the waste have been previously studied, additional tests and analysis may be required to fully characterized the waste product and its suitability for distribution and application to agricultural lands and homeowners properties.

For predominately inorganic wastes such as coal combustion products the following are required:

1. pH and calcium carbonate equivalent (CCE).
2. Extractable P, Ca, Mg, K, Na and soluble salts.
3. Total As, Al, B, Ba, C, Ca, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Mo, Na, Ni, P, Pb, S, Se, Si, Ti, Zn.

For predominately organic waste, including water treatment residuals (WTR) and exceptional quality biosolids the following are required:

1. Complete nutrient and metal analysis including solids content, pH, calcium carbonate equivalent (CCE), total organic C, TKN, NO₃-N, NO₂-N, and NH₄-N.
2. Total P, K, Ca, Mg, S, As, Cd, Cu, Hg, Mo, Ni, Pb, Se and Zn.
3. In addition to the above, for exceptional quality biosolids a detail description of the processes employed to meet the Class A pathogen requirements in 40 CFR 503.32(a) and the vector reduction requirements in 40 CFR 503.33(b)(1) through (b)(8).

Organic wastes and sludges must be tested for EPA designated Priority Pollutants and shown to be under any current risk-based action levels. Water treatment sludges must meet the EPA 503 guidelines for heavy metals content for land application. The 503 guidance levels for heavy metals in biosolids are commonly used as a general screening tool for all organic wastes applied to soils, but are not proof-positive within the decision criteria for land-applied products that are not biosolids.

For mixes of soil, CCPs, WTR's and biosolids:

Waste components in the blend shall be pretested and approved for use as specified in the appropriate section above as an inorganic or organic waste. The blended product shall be analyzed for routine soil test analysis, including pH, electrical conductivity/soluble salt concentration, total organic-C, total-N and N forms, plant available P, K, Ca, Mg, Mn, Zn, B and Mo and total As and total Se.

APPENDIX B

TERM	DEFINITION
Al	Aluminum
As	Arsenic
B	Boron
Ba	Barium
C	Carbon
CCE	Calcium Carbonate Equivalent
Ca	Calcium
Cd	Cadmium
Co	Cobalt
Cr	Chromium
Cu	Copper
Fe	Iron
Hg	Mercury
K	Potassium
Mg	Magnesium
Mn	Manganese
Mo	Molybdenum
Na	Sodium
Ni	Nickel
NO ₃ -N	Nitrate Nitrogen
NO ₂ -N	Nitrite Nitrogen
NH ₄ -N	Ammonium Nitrogen
P	Phosphorus
Pb	Lead
S	Sulfur
Se	Selenium
Si	Silicon
Soluble Salts	The inorganic soil constituents (ions) that are dissolved in the soil water
Ti	Titanium
TKN	Total Kjeldahl Nitrogen
Zn	Zinc