Ohio Department of Natural Resources Division of Mineral Resources Management

GENERAL GUIDELINES

Beneficial Use of Coal Combustion Byproducts (CCB) On Coal Mining and Reclamation ORC Chapter 1513 Permit Areas

Background Information

In March 1999 the Ohio Revised Code (ORC) Section 1513.02 was amended to establish provisions for the beneficial use of coal combustion byproducts (CCBs). The amended language in ORC 1513.02(A)(7) authorizes the Division of Mineral Resources Management to regulate the beneficial use of CCBs at coal mining and reclamation operations and abandoned mine land reclamation projects. The beneficial use of coal combustion byproducts at such coal mining and reclamation operations and abandoned mine lands is subject to all applicable performance standards and requirements established under Chapter 1513. of the Revised Code and administrative rules promulgated thereunder.

Beneficial uses regulated under ORC 1513.02(A)(7) do not have to obtain solid waste facility permit and licenses under ORC 3734 and 6111 administered by the Ohio Environmental Protection Agency (OEPA). The amended code does not limit other requirements applicable to coal combustion byproducts under ORC Chapters 3704, 3714, 373., or 6111 or other local or federal laws. These may include, but are not limited to requirements governing air pollution control, hazardous waste, national pollutant discharge elimination system (NPDES) permits, and/or Section 401 water quality certifications required under the Clean Water Act.

The following definitions apply to beneficial use of CCBs pursuant to ORC 1513.02 (A)(7)(b):

(i) "Coal combustion byproducts" means fly ash, bottom ash, coal slag, flue gas desulphurization and fluidized bed combustion byproducts, air or water pollution control residues from the operation of a coal-fired electric or steam generation facility, and any material from a clean coal technology demonstration project or other innovative process at a coal-fired electric or steam generation facility.

(ii) "Beneficial use" means the use of coal combustion byproducts in a manner that is not equivalent to the establishment of a disposal system or a solid waste disposal facility and that is unlikely to affect human health or safety or the environment adversely or to degrade the existing quality of the land, air, or water. "Beneficial use" includes, without limitation, land application uses for agronomic value; land reclamation uses; and discrete, controlled uses for structural fill, pavement aggregate, pipe bedding aggregate, mine sealing, alternative drainage or capping material, and pilot demonstration projects.

(iii) "Structural fill" means the discrete, controlled use of a coal combustion byproduct as a substitute for a conventional aggregate, raw material, or soil under or immediately adjacent to a building or structure. "Structural fill" does not include uses that involve general filling or grading operations or valley fills.

(iv) "Pavement aggregate" means the discrete, controlled use of a coal combustion byproduct as a subbase material or drainage layer under or immediately adjacent to a paved road or a paved parking lot where the coal combustion byproduct is a substitute for a conventional aggregate, raw material, or soil.

(v) "Pipe bedding aggregate" means the discrete, controlled use of a coal combustion byproduct as a substitute for a conventional aggregate, raw material, or soil under, around, or immediately adjacent to a water, sewer, or other pipeline.

(vi) "Coal-fired electric or steam generation facility" includes any boiler that is fired with coal or with coal in combination with petroleum coke, oil, natural gas, or any other fossil fuel.

(vii) "Solid waste disposal facility" means a facility for the disposal of solid wastes as provided in Chapter 3734. of the Revised Code and rules adopted under it.

(viii) "Disposal system" has the same meaning as in section 6111.01 of the Revised Code.

Under provisions of 1513.02 of the ORC, the beneficial use of CCBs is limited to three general purposes:

- land application uses for agronomic value (soil additive);
- land reclamation uses; and
- discrete, controlled uses for structural fill, pavement aggregate, pipe bedding aggregate, underground mine sealing, alternative drainage or capping material, and pilot demonstration projects.

Land application uses for agronomic value include CCB application as a soil additive to create a growing medium suitable for establishment of vegetation. Land reclamation uses include CCB application as a neutralization agent in mitigating impacts of, or reducing the potential for, formation of acid mine drainage. Controlled uses of CCBs for structural fill, aggregate, capping materials etc., are limited to well-defined surface areas. Proposals that appear to be disposal activities are ineligible under provisions of 1513.02 of the Revised Code and will be rejected by DMRM.

Procedures and Application Requirements:

The beneficial use of CCBs at active coal mining operations, including those operations which result in reclamation of abandoned mine lands, will be accomplished through the coal permitting process. *Beneficial use of CCBs relative to construction of abandoned mine land (AML) reclamation projects that are not related to permitted coal mining activities will be coordinated by the Division's AML staff.*

A CCB PLAN form for Beneficial Use of CCB has been developed to ensure completeness and consistency of review. Additionally, individual guidelines for specific hydrology and soils related issues have been prepared. Refer to the application and specific guidelines for preparation and review of CCB beneficial use proposals.

Any questions regarding the beneficial use of CCBs should be directed to the Division as early in the application process as possible, preferably prior to submission of an application.

Note that if CCBs are proposed to be beneficially used in conjunction with coal waste disposal, as described on the COAL WASTE PLAN form, information required by both forms need be submitted only one time. That is, the forms should be used in a complementary manner and information should be referenced between them, as appropriate, in order to avoid duplication.

1. For New Coal Mine Permit Applications and Adjacent Area Applications:

   Information supporting the beneficial use of CCBs will be submitted on the CCB PLAN form and referenced under Part 3, A (8) of a surface mining application and Part 3, A (12) of an underground mining application. The CCB PLAN form and supporting information must clearly demonstrate that the CCB material is for a beneficial use and that the proposed use is NOT a disposal activity.

   New area and adjacent area applications will be processed following existing procedures and submittal requirements. Three (3) copies of the complete application, maps, and necessary design plans need to be submitted to Columbus Permitting staff for completeness review and application processing.

2. For Existing Coal Mine Permits:

   Submit an Application to Revise a Permit (ARP) that includes the CCB PLAN form and information supporting the beneficial use of CCBs. The ARP process will follow the general guidelines contained in PPD Permitting, Hydrology & Bonding Section #2001-1. A minimum of three (3) copies of the complete ARP, maps, and necessary design plans need to be submitted for application processing. The ARP will have a permitting environmental specialist (ES)/application manager assigned and will be reviewed for completeness prior to distribution to technical reviewers. The permitting ES will coordinate the technical reviews and be responsible for all processing requirements.

The addition of beneficial use of CCBs in an existing permit may constitute a significant revision and, if so, would need to meet public notification/comment requirements pursuant to Ohio Administrative Code rule 1501:13-4-06. The ARP must address the significant nature of the revision (i.e. addition of beneficial use of CCBs for a specified purpose), include public notice text and other publication information, and the CCB PLAN form. The ARP must clearly indicate the section(s) of the permit being revised and the CCB PLAN form and supporting information must clearly demonstrate that the CCB material is for a beneficial use and that the proposed use is NOT a disposal activity.

3. AML Reclamation Projects:

   Review of beneficial use proposals relative to no-cost and direct negotiated AML reclamation projects to be constructed in conjunction with coal permits will be coordinated by AML and Permitting staff under existing procedures. *Evaluation of such no-cost and direct negotiated AML projects will conform to these guidelines.*

   Beneficial use of CCBs relative to AML projects administered solely under the Division's AML program will be coordinated by AML staff. Evaluation of project proposals utilizing beneficial use of CCBs on construction projects will conform to guidelines developed and implemented by AML staff.

4. DMR Technical Reviewers for Beneficial Use of CCB:

   - Permitting Environmental Specialist (central office staff, all application types). Review of applications for environmental considerations, coordination of application and technical reviewers.
   - Permitting Hydrologist (all application types; see guidelines). Review of applicable hydrology and geological information, CCB material and leachate analyses, acid base accounting, PHC and CHIA documents.
   - Permitting Field Environmental Specialist (all application types). Review of applications for environmental considerations.
   - Reclamation Inspector (ARPs only). Review of CCB proposals as they relate to current mining and reclamation operations.
   - Soil Scientist (as necessary; see guidelines). Review of CCB materials if proposed as a soil additive.
   - Engineer (as necessary). If stability is an issue, an engineer review and appropriate engineering designs/stability analysis will be required.
   - AML Field Environmental Specialist (no-cost reclamation proposals, direct negotiated construction projects, AML construction projects). Review of CCB proposals for environmental considerations.

Distance Limitations:

The following general distance limitations have been established for utilization of CCBs. Further limitations are provided in the hydrology and soils guidelines. CCBs may not be applied:

- As a soil additive within 100 feet of an intermittent or perennial stream or wetland area. This distance may be increased in cases involving exceptionally high value streams and wetland areas.
- Within 500 feet upgradient of a legitimately-used surface water source or within 300 feet of a legitimately-used groundwater source.
- Within 300 feet of an occupied dwelling unless the owner provides written waiver.

References:

- Memorandum of Agreement Between Ohio Environmental Protection Agency and The Ohio Department of Natural Resources on Non-Toxic Fly Ash, Bottom Ash, and Residual Solid Waste Beneficial Use and Disposal.
- Proceedings of Coal Combustion By-Products Associated with Coal Mining - Interactive Forum Southern Illinois University at Carbondale, October 29-31, 1996, Edited by: Yoginder P. Chugh, Brandi M. Sangunett, and Kimery C. Vories, Sponsored by US Department of the Interior Office of Surface Mining, Alton, Illinois; Coal Combustion Residues Management Program; and Mining Engineering Department, Southern Illinois University at Carbondale, especially the following:
  - "Regulation of Coal Ash Placement on Surface Coal Mines in Indiana", Mike Sponsler, Division Director, Indiana Department of Natural Resources, Division of Reclamation
  - "State of Kentucky Requirements for Disposal of Coal Combustion By-Products in Surface Mined Land", C. Ball, Natural Resources and Environmental Protection Cabinet, Department for Surface Mining Reclamation and Enforcement
  - "Pennsylvania's Regulatory Requirements for Use of Coal Combustion Ash at Coal Mining Operations", Nevin Strock, Chief, Surface Mine Permit Section, Bureau of Mining and Reclamation, Pennsylvania Department of Environmental Protection
  - "Leaching Tests: Commonly Used Methods, Examples of Applications to Coal Combustion By-Products, and Needs for the Next Generation", Susan S. Sorini, Western Research Institute, "Bulk Chemical and Mineral Characteristics of Coal Combustion By-Products (CCB)", Jody K. Tishmack, School of Engineering, Purdue University
  - "Engineering and Regulatory Issues for Coal Combustion By-Product Characterization and Utilization", Debra F. Pflughoeft-Hassett, David J. Hassett, Bruce A. Dockter, Kurt E. Eylands, Everett A. Sondreal, and Edward N. Steadman,
  - Energy and Environmental Research Center, University of North Dakota
- West Virginia Division of Environmental Protection, Office of Mining and Reclamation, Guidance Policy Document, Coal Combustion By-Product Utilization Policy, January 13, 1998, John E. Caffrey, Director
- West Virginia Division of Environmental Protection, Office of Mining and Reclamation, Permit Handbook, Section 18 – Ash Disposal, Coal Combustion By-Product Utilization Policy, January 13, 1998
- West Virginia Division of Environmental Protection, Office of Mining and Reclamation, Application for Coal Ash Utilization (MR-36 Form, 1/94)
- Pennsylvania Department of Environmental Protection, Bureau of Mining and Reclamation, Module 25: Coal Ash Beneficial Use; Module 27: Sewage Sludge/Coal Ash Beneficial Use; Coal Ash Beneficial Use Certification Application

  Beneficial Use of Coal Ash at Active Coal Mine Sites, Document Number 563-2112-206, April 30, 1998; Certification Guidelines for Beneficial Uses of Coal Ash, Document Number 563-2112-224, April 30, 1998; Alkaline Addition for Surface Coal Mines, Document Number: 563-2112-217, June 30, 1997.
- Kentucky Statute 350.270 "Disposal of coal combustion by-products at surface coal mining operations-Permitting process-Requirements for disposal-Authority for administrative regulations", effective July 15, 1994
- Kentucky Natural Resources and Environmental Protection Cabinet, Department for Surface Mining Reclamation and Enforcement, "Application for Disposal of Coal Combustion By-Products"

- Ohio Environmental Protection Agency, Beneficial Use of Nontoxic Bottom Ash, Fly Ash and Spent Foundry Sand, and Other Exempt Waste, Document Number: DSW 0400.007, November 7, 1994
- Pennsylvania Department of Environmental Protection, "Coal Mine Drainage Prediction and Pollution Prevention in Pennsylvania", October 1998
- United States Geological Survey, COAL COMBUSTION PRODUCTS**,** By Rustu Kalyoncu
- US Department of Energy, National Energy Technology Laboratory, "Coal Combustion By-Product Utilization", Web Page
- US Department of the Interior, Office of Surface Mining, Web Page, CCB Information Network, "Coal Combustion By-Products"
- Pennsylvania Department of Environmental Protection, Pennsylvania Fish and Boat Commission, "Upper Three Runs, Clearfield County Stream Survey, Riverhill Coal Company, 'McCloskey Site' Fly-Ash Capping Project, August 12-13, 1997
- ASA-CSSA-SSSA, "Reclamation of Drastically Disturbed Lands, Chapter 19. Power Plant Fly Ash Utilization for Land Reclamation in the Eastern United States", John P. Capp, U.S. Department of the Interior, Bureau of Mines, Morgantown, West Virginia
- The Ohio State University, Department of Agronomy, "Treatment of acid mine spoil with dry FGD by-products: Leachate quality and plant growth", Richard Stehouwer and Paul Sutton
- "Use of Wet FGD Material For Reclamation and AMD Abatement in Abandoned Acidic Coal Refuse Piles", S. Mafi, American Electric Power
- "Coal Ash for Reclamation", West Virginia University
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- The Ohio State University, Department of Civil and Environmental Engineering and Geodetic Science and Ohio Agricultural Research and Development Center, “Developments in Utilization of CCPs in Ohio,” Tarunjit S. Butalia, Ph.D., P.E. and William E. Wolfe, Ph.D., P.E. and Warren A. Dick, Ph.D.
- The Ohio State University, School of Natural Resources, “Potential Inhibition of Acid Formation in Pyritic Environments Using Calcium Sulfite Byproduct,” Yueli Hao and Warren A. Dick
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