

Executive Summary

25 Pa. Code, Chapters 287 and 290

Beneficial Use of Coal Ash

The Department of Environmental Protection (Department) recommends amendments to Chapter 287 (relating to residual waste management) and new Chapter 290 (relating to beneficial use of coal ash) for consideration by the Environmental Quality Board (Board).

Purpose of the Final-Form Rulemaking

This final-form rulemaking incorporates the key provisions of the Department's policies and procedures on the beneficial use of coal ash. The key provisions address the general and specific operating requirements for beneficial use, which include certification guidelines for the chemical and physical properties of coal ash beneficially used at active and abandoned mine sites. These provisions also relate to water quality monitoring and the storage of coal ash in piles and surface impoundments. This final-form rulemaking also adopts recommendations by the National Academy of Sciences in their 2006 report, *Managing Coal Combustion Residues in Mines*.

Pennsylvania has hundreds of thousands of acres of mine lands that need to be reclaimed. These lands contain many dangerous pits and highwalls that have caused the deaths of numerous citizens over the years. The use of coal ash to reclaim these mines eliminates the dangers associated with the open pits and highwalls and restores a safe environment. Reclamation also restores positive drainage to watersheds by allowing rain water to flow on the surface to streams, rather than infiltrating into deep mines into which it discharges as acid mine drainage. Reclamation of these lands cannot be accomplished fully through federal and state funds. Therefore, a program that allows for the beneficial use of coal ash for mine reclamation in an environmentally responsible manner can aid in closing the gap between available and necessary resources.

The Department has been involved successfully with mine reclamation using coal ash for approximately 25 years. Information on several mine reclamation projects is contained in the 2006 report entitled *Coal Ash Beneficial Use in Mine Reclamation and Drainage Remediation in Pennsylvania*, which was a collaborative effort between the Department and the Materials Research Institute at the Pennsylvania State University.

In addition to unreclaimed mines, more than two billion tons of waste coal piles are scattered across the Anthracite and Bituminous Coal Regions of the Commonwealth. These piles can cause several different types and degrees of adverse impacts on the environment. Waste coal piles produce some of the most significant mine drainage in the state, often having a pH less than 3.0 and acidity in the hundreds to thousands of milligrams per liter, and are also a troublesome source of sediment that has impacted hundreds of miles of stream. Stormwater runoff from waste coal piles also carries large loads of metals including iron, manganese, zinc, nickel, arsenic and cadmium. Finally, waste coal piles can catch fire and produce noxious fumes.

The use of waste coal to fuel power plants has assisted in the elimination of these waste coal piles and remedied the potentially harmful conditions resulting from the continued existence of the piles. To date, 145 million tons of waste coal has been used to fuel power plants. Annually ten percent of Pennsylvania's power is produced from power plants burning waste coal. The ash that is generated from the waste coal has been used to reclaim thousands of acres of abandoned mines. ARIPPA places a value of \$90 million on the reclamation that has been achieved at abandoned mine sites by the coal and power industries through the burning of waste coal and subsequent reclamation with the coal ash that was generated. Additionally, the Department has observed numerous instances where removal of the piles and reclamation has significantly reduced pollutant loads for metals, such as arsenic, zinc, nickel, iron and manganese.

Prior to this final-form rulemaking, the beneficial use of coal ash, including abandoned and active mine reclamation, was managed through existing residual waste regulations and Department technical guidance. In 2008, the Department proposed amendments to the technical guidance documents "Mine Site Approval for the Beneficial Use of Coal Ash," Document Number 563-2112-225 and "Certification Guidelines for the Chemical and Physical Properties of Coal Ash Beneficially Used at Mines," Document Number 563-2112-224. The most frequent comment received during the public comment period on these amendments was that the content of the technical guidance should be placed in regulations rather than Department technical guidance. The Board agrees with the commentators and has included the key provisions of the technical guidance in this final-form rulemaking and further enhanced the existing residual waste regulations related to the beneficial use of coal ash.

The citizens of the Commonwealth will be better served by the amendments being finalized in this rulemaking, which are summarized as follows:

- Increased coal ash monitoring to ensure coal ash meets qualification criteria;
- Increased water quality monitoring for a longer duration to create a robust dataset to facilitate the evaluation and documentation of water quality at sites where coal ash is beneficially used;
- Requirement for minimum number of monitoring wells to characterize the groundwater or other water quality points;
- Requirement for recording a landowner consent for placement of coal ash for beneficial use;
- Improved reporting requirements to track volumes and location of sites where coal ash is beneficially used;
- Consistent operational and monitoring standards for all types of beneficial use;
- A centralized process to qualify coal ash for beneficial use at mine sites;
- An annual fee payable to the Department to offset its costs for coal ash and water quality sampling and testing at mine sites where coal ash is beneficially used;
- Requirements for the storage of coal ash including provisions for design and operations.

Affected Parties

Any persons who generate coal ash with the intention of qualifying it for beneficial use and any persons who utilize that ash will be required to comply with this final-form regulation.

Currently, there are about 50 mine sites across the State that are actively using ash under the beneficial use provisions. At any given time, there can be as many as 60 approved ash sources. Sources include large multi-unit pulverized coal power plants and fluidized bed combustion (FBC) power plants that can produce hundreds of thousands of tons of ash per year and small industrial power plants that may produce less than 10,000 tons per year. The FBC plants, which burn waste coal, have traditionally used 100% of their ash for mine reclamation.

For each of the past several years, 11 million tons of coal ash has been used for mine reclamation. To date, approximately 20 surface mine sites have been reclaimed using coal ash. Landfilling this material would cost the industry between \$220 and \$300 million per year.

In 2008, approximately 11 projects, other than mine reclamation, used coal ash structural fill to construct roadways, an airport runway in Snyder County and a golf course in York County. Many municipalities in Pennsylvania beneficially use bottom ash as antiskid material in the winter months. Currently, eight facilities qualify under a general permit to beneficially use the coal ash produced at that facility as construction material at sites other than mine sites.

A stated goal of the 43 coal-fired electricity producers of Pennsylvania is to find more ways to beneficially use the coal ash produced at their facilities. Therefore, almost all coal-fired power plants will be required to comply with these regulations unless their coal ash is disposed in landfills.

Advisory Groups

The Bureau of Waste Management, Mining and Reclamation, District Mining Operations and Abandoned Mine Reclamation all collaborated to produce these final-form regulations. The Bureau of Mining and Reclamation has specifically met with industry groups in 2008 representing both the corporate energy facilities and the independent power producers, including Reliant Energy, PPL, ARIPPA, and individually with various plant operators by request. The Department has also provided information to the Pennsylvania Coal Association and the Pennsylvania Anthracite Council. The Department typically maintains discussions with the American Coal Ash Association and has had several meetings with citizens representing the Clean Air Task Force/Environmental Integrity Project. The concepts in these final-form regulations in the form of technical guidance were presented to the Mining and Reclamation Advisory Board and published in the *Pennsylvania Bulletin* in September 2008. Comments received from industry, citizenry and DEP staff were used in the formation of this final-form rulemaking. These final-form regulations were presented to the Solid Waste Advisory Committee in May 2010 and Citizens Advisory Council in June 2010.

Public Comments and Board Hearings

The Board held a 45-day public comment period on the proposed rulemaking and four public hearings. A comment and response document was developed and numerous changes were incorporated into the final-form regulation based on the comments received.