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**From:** Joe Osborne [joe@gasp-pgh.org]  
**Sent:** Tuesday, December 22, 2009 5:30 PM  
**To:** EP, RegComments  
**Subject:** GASP Comments - Proposed Regulations on the Beneficial Use of Coal Ash  
**Attachments:** GASP Comments - Proposed Regulations for Beneficial Use of Coal Ash.pdf

Attached please find the Group Against Smog and Pollution's comments on the proposed regulations on the Beneficial Use of Coal Ash (39 Pa.B. 6429, Nov. 7, 2009). If you have any questions or require any additional information please do not hesitate to get in touch.

Sincerely,  
Joe Osborne  
Legal Director  
Group Against Smog and Pollution, Inc.  
5604 Solway Street, Suite 204  
Pittsburgh, PA 15217  
Phone: (412) 325-7382  
Fax: (412) 325-7390  
Cell: (617) 909-8365  
<http://www.gasp-pgh.org/>

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INDEPENDENT REGULATORY  
REVIEW COMMISSION



**GROUP AGAINST SMOG & POLLUTION, INC.**

Wightman School Community Building

5604 Solway Street, Suite 204

Pittsburgh, Pennsylvania 15217

**Phone:** (412) 325-7382; **Fax:** (412) 325-7390

**Website:** <http://www.gasp-pgh.org>

December 22, 2009

**By Electronic Mail**

Environmental Quality Board

P. O. Box 8477

Harrisburg, PA

17105-8477

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INDEPENDENT REGULATORY  
REVIEW COMMISSION

**Re: Comments on the Proposed Rulemaking for the Beneficial Use of Coal Ash**

These comments are submitted on behalf of Group Against Smog and Pollution (GASP), a Pittsburgh-based non-profit citizens group working for a healthy, sustainable environment for the residents of Southwestern Pennsylvania. GASP commends the Environmental Quality Board and the Department of Environmental Protection for all of their efforts in developing the draft rules for the Beneficial Use of Coal Ash.

In its current form, the proposed rule is a significant improvement over the draft guidance documents first released for public comment in the fall of 2008. Between the fall of 2008 and present, provisions have been incorporated to prohibit coal ash placement near seasonal and perched water tables, extend post-placement groundwater monitoring periods, and require analysis of additional parameters prior to coal ash certification. Perhaps most significant, these provisions are now being proposed as regulations, rather than unenforceable guidance documents. GASP believes these changes are steps in the right direction to ensure coal ash is handled responsibly. However, as detailed below, in their current form, these regulations remain inadequate to protect human health and the environment.

**1. Coal Ash Minefilling Must be Prohibited Because no Methods Exist to Ensure Minefilled Coal Ash will not Contaminate Ground and Surface Waters in Violation of State and Federal Law.**

GASP does not believe coal ash can ever be safely disposed of in mines. EPA has documented at least 67 coal combustion waste landfills and surface impoundments where disposal resulted in environmental damage,<sup>1</sup> and this figure does not including the TVA Kingston spill in 2008, the TVA Widows Creek spill in 2009, or 2005 coal ash landslide in Forward Township, Allegheny County. Given the number of damage cases resulting from coal

<sup>1</sup> *Coal Combustion Waste Damage Case Assessments*, U.S. Environmental Protection Agency Office of Solid Waste 32 (2007), Docket ID No. EPA-HQ-RCRA-2006-0796-0015 (hereinafter *Damage Case Assessments*).

ash disposal in relatively simple structures like a landfills and holding ponds, GASP does not believe coal combustion waste placement in the complex hydrology and geochemistry of mine sites can ever be performed safely. GASP remains unconvinced that mine site disposal can ever be performed in a manner that poses an acceptably low long-term risk to human health and the environment.

Concern over the health and environmental impacts of coal ash mine disposal prompted Congress to ask the National Academy of Sciences (NAS) to prepare a report on the safety of the practice. This report, released in 2006, states “sizable uncertainty is associated with our current understanding of CCR [coal combustion residue] behavior in the mine environment [and] few, if any, studies have analyzed the long-term behavior of CCR in the mine setting.”<sup>2</sup> The NAS report also concluded that it was none of their recommendations “will totally prevent [minefilled] CCRs from coming into contact with infiltrating water.”<sup>3</sup> Real world studies support the NAS conclusion: A 2007 Clean Air Task Force study of Pennsylvania coal ash minefills determined that 10 of 15 randomly selected minefill sites exhibited degraded water quality as a result of coal ash disposal.<sup>4</sup> A study of water quality impacts at two coal ash minefills in West Virginia found toxic concentrations of metals in ground and surface waters downgradient from both minefill sites.<sup>5</sup>

Given the likelihood of water contamination resulting from coal ash minefilling, GASP believes the practice is not only irresponsible, but also violates state and federal law, including:

- The Resource Conservation and Recovery Act (RCRA) prohibition on open dumping.<sup>6</sup>
- The RCRA citizen suit and EPA enforcement provisions related to imminent and substantial endangerment to health or the environment,<sup>7</sup>

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<sup>2</sup> MANAGING COAL COMBUSTION RESIDUES IN MINES, COMMITTEE ON MINE PLACEMENT OF COAL COMBUSTION WASTES, NATIONAL RESEARCH COUNCIL, p. 78 (2006) available at [http://www.nap.edu/nap-cgi/execsumm.cgi?record\\_id=1592](http://www.nap.edu/nap-cgi/execsumm.cgi?record_id=1592) (hereinafter “NAS REPORT.”).

<sup>3</sup> *Id.* p.8.

<sup>4</sup> IMPACTS ON WATER QUALITY FROM PLACEMENT OF COAL COMBUSTION WASTE IN PENNSYLVANIA COAL MINES, CLEAN AIR TASK FORCE (JULY 2007) available at <http://www.catf.us/publications/reports/PAMinefill.pdf>. While the allegations of environmental damage resulting from coal ash placement in mines has been the subject of some dispute, note that the NAS believed these allegations had sufficient merit to shape the findings of its 2006 report, see MANAGING COAL COMBUSTION RESIDUES IN MINES, COMMITTEE ON MINE PLACEMENT OF COAL COMBUSTION WASTES, NATIONAL RESEARCH COUNCIL, p. 82 (2006) available at [http://www.nap.edu/nap-cgi/execsumm.cgi?record\\_id=1592](http://www.nap.edu/nap-cgi/execsumm.cgi?record_id=1592) (hereinafter “NAS REPORT.”).

<sup>5</sup> Evan Hansen and Martin Christ, Ph.D., WATER QUALITY IMPACTS OF COAL COMBUSTION WASTE DISPOSAL IN TWO WEST VIRGINIA COAL MINES (April 2005), available at <http://www.catf.us/publications/reports/DSS-CCWinWV.pdf>.

<sup>6</sup> 42 U.S.C. § 6945(a). Open dumping includes contamination of “an underground drinking water source beyond the solid waste boundary” of a disposal site (40 C.F.R. § 257.3-4(a)). “Contaminate” is defined as the introduction of a substance that would cause groundwater to exceed an MCL or increase contaminant concentrations in groundwater already exceeding an MCL (*Id.* § 257.3-4(c)(2)). An “underground drinking water source” includes any aquifer that actually supplies drinking water for human consumption or in which the groundwater contains less than 10,000 mg/l total dissolved solids (*Id.* § 257.3-4(c)(4)). Thus whenever minefilling causes or exacerbates an MCL violation, the activity constitutes open dumping in violation of RCRA. A number of the existing sites identified in the Pennsylvania and West Virginia minefill studies mentioned above likely qualify as RCRA-prohibited open dumps.

<sup>7</sup> 42 U.S.C. § 6973 & § 6972(a)(1)(B).

- The PADEP requirement that “[e]ach person who conducts surface mining activities shall conduct the mining and reclamation operation to prevent water pollution”<sup>8</sup> and “prevent material damage to the hydrologic balance outside the permit area.”<sup>9</sup>
- The PADEP requirement that each mine permittee must restore mined areas “in a timely manner to conditions that are capable of supporting the uses which they were capable of supporting before any mining, or to higher and better uses.”<sup>10</sup> The final condition of the mined area may not “present any actual or potential threat to public health or safety or to fish and wildlife or of water diminution, interruption, contamination or pollution.”<sup>11</sup>
- The Clean Water Act NPDES requirements for point sources discharging into waters of the United States.<sup>12</sup>

As discussed above, NAS concluded that there is no viable method to prevent minefilled Coal Ash from interacting with groundwater. Therefore, not only do existing coal ash minefill sites likely violate some or all of the state and federal regulatory requirements listed above, but sites created under the newly proposed beneficial use regulatory scheme would do so as well. Thus minefilling should not be included as a permissible beneficial use in the final regulations.

## **2. If Mine Site Disposal is Permitted in the Final Regulations, Other Beneficial Reuse Options Must be Prioritized over Mine Site Disposal.**

Given the variety of beneficial uses of coal combustion waste that are relatively safe compared to the potential hazards of placing coal ash in mines (e.g. concrete, wallboard), the NAS report “recommends that secondary uses of CCRs that pose minimal risks to human health and the environment be strongly encouraged.”<sup>13</sup> DEP policy should likewise encourage safer alternatives to mine site disposal where possible, and the regulations should include a statement to this effect. Further, in cases where chemical and physical characterization of coal ash samples reveal that the material is suitable for other beneficial uses less likely to pose a risk to human health and the environment, coal ash approval for mine disposal should be contingent on the coal ash generator demonstrating that other beneficial uses are infeasible.

## **3. Short-Term Single Point Batch Leach Tests do not Provide an Accurate Prediction of Minefilled Coal Ash Leaching Behavior. The Regulations Must Require a More Representative Test Method.**

According to proposed § 290.201(c)(5)(i) related to coal ash certification total and leachable concentrations for a number of parameters are to be determined

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<sup>8</sup> 25 Pa. Code § 87.101(d).

<sup>9</sup> 25 Pa. Code § 87.101(a).

<sup>10</sup> 25 Pa. Code § 87.159(a).

<sup>11</sup> 25 Pa. Code § 87.159(c)(4).

<sup>12</sup> 33 U.S.C. § 1342(a)(1)-(2)

<sup>13</sup> NAS 2006 REPORT, *supra* note 2 at p. 5.

“using methods found in EPA's 'Test Methods for Evaluating Solid Waste, Physical/Chemical Methods' (EPA Publication No. SW-846) or comparable methods approved by the Department. Leachate concentrations shall be determined using EPA Method 1312, the Synthetic Precipitation Leaching Procedure, or another leaching procedure approved by the Department.”

However, it has been well established that single point batch leaching tests such as the SPLP and the TCLP do not accurately estimate disposal site leaching behavior.<sup>14</sup>

“These tests do not use leaching solutions that are representative of the large range of geochemical conditions likely to be encountered in mines, and they may greatly underestimate the actual leaching that will occur. It is recommended that leaching procedures be continually improved to encompass the range of pH and oxidation-reduction conditions that might be encountered in pore-water close to the CCR placement area over an extended time (many decades to centuries). Leaching tests should also assess slower dissolution reactions.”<sup>15</sup>

“[A] wider range of leaching conditions should be applied in static leach tests. These leaching conditions should include low-pH leaching solutions to represent the aggressive leaching that may occur in the most reactive areas of the unsaturated zone. The composition of the leaching solution should be monitored both before and after leaching is complete to ensure that the final leaching solution is representative of expected conditions at the mine site. Leaching tests should be conducted over longer periods (e.g., several weeks) and a few solid-to-solution ratios should be evaluated to assess whether precipitation controls are limiting leaching characteristics. Samples that do not pass a predetermined criterion should be rejected for mine placement. Samples that do pass the criterion may still have to be evaluated in greater detail, depending on the potential risks of CCR placement determined from site characterization, including column leaching tests and longer-term evaluations of leaching as CCR materials age.”<sup>16</sup>

In fact, in a 2005 paper, PADEP has recognized the limitations of the very same single point batch leaching tests it now proposes to allow for purposes of coal ash characterization: “some limitations or criticisms of the usefulness of the SPLP test deal with the pass/fail or go/no go nature of the results, as compared to other types of leaching test methods where the goal is to produce data on leaching rates over some unit of time.”<sup>17</sup> In the 2005 study PADEP goes on to identify several potentially more promising leach tests, including the ANS 16.1, the MCC1 leach test, the MCC-3S Agitated Powder

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<sup>14</sup> *Human and Ecological Risk Assessment of Coal Combustion Wastes*, prepared by RTI for EPA (2007), Docket ID No. EPA-HQ-RCRA-2006-0796-0009, p.4-32 (hereinafter *Human and Ecological Risk Assessment*); NAS 2006 REPORT, *supra* note 2 at p. 151-52.

<sup>15</sup> NAS 2006 REPORT, *supra* note 2 at p. 151.

<sup>16</sup> *Id.* at 151-52.

<sup>17</sup> Menghini *et. al.*, PADEP, THE USE OF LEACHATE DATA AND OTHER FACTORS IN EVALUATING CCB'S FOR PLACEMENT AT COAL MINE SITES IN PENNSYLVANIA, p. 119 (2005), available at: <http://www.mcrcc.osmre.gov/PDF/Forums/CCB6/2-6.pdf>

Leach Test Method, and the Mine Water Leaching Procedure (MWLP).<sup>18</sup> However, to our knowledge these and other potential alternatives<sup>19</sup> to inadequate short-term single-point tests have received no consideration during the rulemaking process. PADEP cannot justify the use of characterization methods that the agency itself has recognized are inadequate. The final regulations must require leach tests more representative of conditions within the mine environment if coal ash minefilling is to be permitted.

#### **4. Water Quality Monitoring Must be Required at All Ash Placement Sites**

The proposed regulations currently exempt many coal ash placement activities from water quality monitoring requirements.<sup>20</sup> GASP believes water quality monitoring must be required at all sites where over 1,000 tons or more of coal ash is placed as minefill or structural fill. In particular, GASP sees no rational basis for exempting ash placement operations at abandoned mines from groundwater monitoring requirements when a similar volume of ash would trigger groundwater monitoring requirements at an active mine site.

#### **5. Groundwater Monitoring at Coal Ash Placement Sites Must Continue for at Least 30 Years after Coal Ash Placement has ceased.**

The proposed regulation requires groundwater monitoring to continue for 10 years after closure at many coal ash placement sites; this is certainly an improvement from the 5 year duration in the original 2008 draft guidance<sup>21</sup> but is still be insufficient to ensure groundwater contamination is detected and remediated. While the NAS committee does not recommend a specific post-closure groundwater monitoring duration, the committee does suggest that fewer than 10 years of post-closure monitoring is insufficient<sup>22</sup> and that *more than* 10 years is necessary to accurately characterize coal ash behavior.<sup>23</sup> The NAS report notes that “changes in groundwater quality can take several decades”<sup>24</sup> and thus “[a] longer field monitoring period will likely be needed in some situations”<sup>25</sup> Further, “In cases where there was a large distance between the location of CCRs and monitoring wells, monitoring over a limited time frame (e.g., <10 years) might not detect any problem, even if one existed.”<sup>26</sup> A review of coal ash landfill

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<sup>18</sup> *Id.* at 119-20.

<sup>19</sup> See e.g. Bonetti et. al., ASSESSING THE WATER QUALITY IMPACTS OF FLY ASH STRUCTURAL FILL PROJECTS (Oct. 1996), available at: <http://www.mcrc.org/PDF/Forums/CCB/4-1.pdf>, (pairing leach tests with risk assessments); Gregory Helms, USEPA OSW, US EPA, LEACH TESTING OF COAL COMBUSTION RESIDUES p98, available at: <http://www.mcrc.org/PDF/Forums/CCB6/2-3.pdf>, (the Kosson leach test).

<sup>20</sup> Proposed 25 Pa. Code § 290.301(a).

<sup>21</sup> PADEP, Draft: MINE SITE APPROVAL FOR THE BENEFICIAL USE OF COAL ASH, p. 4 (DEP ID: 563-2112-225) (September 20, 2008).

<sup>22</sup> NAS 2006 REPORT, *supra* note 2 at p. 167-68.

<sup>23</sup> *Id.* at p. 78. (“Long-term (>10 years) studies that encompass a range of climatic and geologic settings are needed to accurately characterize CCR behavior in mine sites.” (emphasis added))

<sup>24</sup> *Id.* at 170.

<sup>25</sup> *Id.*

<sup>26</sup> *Id.* at p. 167-68.

and surface impoundment damage cases reveals many instances where groundwater exceedances are not detected until decades after initial disposal.<sup>27</sup>

Pennsylvania municipal solid waste landfills are typically subject to a 30-year postclosure monitoring requirement.<sup>28</sup> The same 30-year duration, if not longer, must be required for coal ash placement sites, particularly given that municipal solid waste is relatively benign in comparison to coal ash and landfills are more hydrologically stable than complex mine environments. In fact, a 30+year monitoring requirement seems quite modest given that “[a]rrival times of the peak concentrations at a receptor well” for coal ash landfills number in the “hundreds to thousands of years.”<sup>29</sup>

#### **6. Water Quality Monitoring Systems Must Include Monitoring Wells Placed Directly in Minefilled Coal Ash**

In accordance with NAS report recommendations, “[a]t least one [monitoring] well . . . and preferably two wells, should be placed directly in the CCR to monitor local porewater chemistry and assess the field leaching behavior.”<sup>30</sup> Thus the regulations must explicitly require at least one porewater monitoring point at the coal ash placement site to ensure ash placement characteristics are consistent with the predicted flow rates and chemical environment.

#### **7. Soil Substitute/Soil Additive Requirements Must Include Loading Rates for all Parameters Sampled For During the Coal Ash Certification Process**

Given the wide variation in fly ash chemical composition,<sup>31</sup> proposed § 290.103 should include loading rates for all parameters sampled for during the coal ash certification process.

#### **8. Any Use of Coal Ash as Structural Fill, Regardless Of Volume, Must Be Recorded on the Placement Site Deed**

Proposed § 290.102(a)(7) requires landowners to use more than 10,000 tons of coal ash as structural fill to record such use on the property deed. GASP believes any use of coal ash as structural fill, regardless of volume, should be recorded on the placement site deed.

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<sup>27</sup> *Damage Case Assessments supra* note 1,

<sup>28</sup> See e.g. James Wentzel, Presentation: PADEP Closure and Post-Closure Requirements for Landfills, slide 25 (2005), available at: [http://www.depweb.state.pa.us/southeastro/lib/southeastro/pottstown\\_closure\\_presentation.ppt](http://www.depweb.state.pa.us/southeastro/lib/southeastro/pottstown_closure_presentation.ppt).

<sup>29</sup> *Human and Ecological Risk Assessment supra* note 14 at ES-2.

<sup>30</sup> NAS 2006 REPORT, *supra* note 2 at p. 170.

<sup>31</sup> See e.g., PADEP, Draft: MINE SITE APPROVAL FOR THE BENEFICIAL USE OF COAL ASH, p. 4 (DEP ID: 563-2112-225) (September 20, 2008), (“Coal ashes vary considerably in their chemical and physical properties depending on the fuel source, the combustion technology used, air pollution control practices, and ash handling procedures.”); PADEP, COAL ASH BENEFICIAL USE IN MINE RECLAMATION AND MINE DRAINAGE REMEDIATION IN PENNSYLVANIA, p 304-05 (2004), available at:

[http://www.dep.state.pa.us/dep/deputate/minres/bmr/beneficial\\_use/Index.htm](http://www.dep.state.pa.us/dep/deputate/minres/bmr/beneficial_use/Index.htm)

**9. The Final Regulations Must Include Financial Assurance Requirements Adequate to Cover Long-Term Monitoring Costs and all Reasonably Foreseeable Potential Remediation Costs**

Current bonding requirements are intended only to cover the costs of recontouring and revegetating placement sites.<sup>32</sup> Given the numerous damage cases resulting from coal ash disposal<sup>33</sup> the uncertainties related to the long-term behavior of coal ash placed in mines,<sup>34</sup> and the lengthy periods between placement and contaminant arrival at receptor points,<sup>35</sup> the bonding requirement must be expanded to include adequate financial assurance to cover long term monitoring costs and all reasonably foreseeable potential remediation costs that could result from placement operations contaminating ground- or surface-water. The bond requirements for Pennsylvania residual waste disposal facilities<sup>36</sup> could serve as a model.

**10. The Provisions Granting PADEP Broad Discretion to Waive or Modify Regulatory Safeguards Must be Eliminated.**

The background section of the PA Bulletin notice for this rulemaking states, “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 proposed rulemaking.”<sup>37</sup> However, the primary purpose of placing the guidance document provisions in regulations is to create enforceable, nondiscretionary requirements. This purpose is defeated by the numerous provisions reserving discretion for DEP to diverge from these regulatory requirements, often without even describing the criteria or factors to be considered in allowing a requirement to be waived.

For example:

- § 290.101(e) allows DEP to waive the requirement that coal ash may not be placed within eight feet of the water table “upon a demonstration that groundwater contamination will not occur.”
- § 290.104(f)(1) & (f)(6) allows DEP to waive the requirement that the volume of minefilled ash cannot exceed the volume of material removed by mining.

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<sup>32</sup> PADEP, Interim Final: CERTIFICATION GUIDELINES FOR THE CHEMICAL AND PHYSICAL PROPERTIES OF COAL ASH BENEFICIALLY USED AT MINES, p. 9 (DEP ID: 563-2112-224) (Apr. 6, 2009); PADEP, Technical Guidance Document: TGD 563-2504-001 Conventional Bonding for Land Reclamation – Coal, p. 12 (Nov. 25, 2006).

<sup>33</sup> See e.g., NAS REPORT, *supra* note 2 at Chapter 8; *Damage Case Assessments*, *supra* note 1 at p. 32; IMPACTS ON WATER QUALITY FROM PLACEMENT OF COAL COMBUSTION WASTE IN PENNSYLVANIA COAL MINES, CLEAN AIR TASK FORCE (JULY 2007) available at <http://www.catf.us/publications/reports/PAMinefill.pdf>. While the allegations of environmental damage resulting from coal ash placement in mines has been the subject of some dispute, note that the NAS believed these allegations had sufficient merit to shape the findings of its 2006 report, see NAS REPORT, p. 82.

<sup>34</sup> See *supra* discussion, sections 3 & 5.

<sup>35</sup> *Human and Ecological Risk Assessment*, *supra* note 14, at p. 4-7-4-8.

<sup>36</sup> 25 Pa. Code § 287.301 *et. seq.*

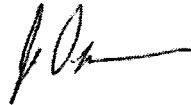
<sup>37</sup> 39 Pa.B. 6429, section D.



- § 290.104(f)(2) allows DEP to waive the requirement that minefilled ash must be mixed with spoil or spread in layers no greater than two feet deep.
- § 290.105(e)(1) allows DEP to waive the pH requirements for coal ash disposed of in abandoned mines.
- § 290.105(e)(2) allows DEP to waive the maximum slope requirements for coal ash disposed of in abandoned mines.
- § 290.301(a)(2) allows DEP to reduce the required number of groundwater background samples.
- § 290.301(a)(2) allows DEP to reduce groundwater sampling frequency.
- § 290.305(d) allows DEP to extend the distances of secondary contaminant compliance points from the coal ash placement area.
- § 290.402(a), (b), and (c)(2) allows DEP to increase the maximum duration of coal ash storage.
- § 290.404(a)(9) allows DEP to waive the minimum distance requirements between coal ash storage impoundments and drinking water supplies

These waiver provisions create the very real possibility of arbitrary or inconsistent permitting and enforcement. If the coal ash beneficial use regulations are to serve as a consistent, reliable means to reduce the health and environmental risks posed by coal ash, these waiver provisions must be eliminated.

Sincerely,



Joseph Osborne  
Legal Director  
Group Against Smog &  
Pollution, Inc.