

US EPA ARCHIVE DOCUMENT



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF  
SOLID WASTE AND EMERGENCY  
RESPONSE

July 21, 2011

Ms. Pamela F. Faggert  
Vice President and Chief Environmental Officer  
Dominion Resources Services Inc.  
5000 Dominion Boulevard  
Glen Allen, Virginia 23060

Dear Ms. Faggert:

Thank you for meeting with us on June 17, 2011, to discuss concerns related to EPA's final rule entitled, *Identification of Non-Hazardous Secondary Materials (NHSM) That Are Solid Wastes*. 76 FR 15456 (March 21, 2011). You raised a number of questions regarding the regulatory status of materials being used in specific recirculation/reinjection processes and carbon burn-out (CBO) units at Dominion Power's facilities—that is, are they solid wastes or products under the NHSM rule?

First, the position expressed in this letter is based on information provided to EPA during our June 17, 2011 meeting, an April 19, 2011 letter from PMI Technologies LLC, and a June 16, 2011 email.<sup>1</sup> Additionally, under the regulations, your company is responsible for determining whether a particular material is or is not a solid waste.

Based on the information provided in our regulations (as augmented by the interpretation discussed in the preamble to the final rule and the rulemaking record), we believe the facts indicate that the units you describe constitute a continuous process in recovering energy from coal and thus, these units would not be combusting solid wastes under the NHSM rule. Further discussion of the information you provided and its relevance to the position expressed in this letter is provided below for both the ash recirculation/reinjection units and the CBO units.

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<sup>1</sup> See June 16, 2011 email from Kimberly Lanterman with Dominion Power to George Faison and Marc Thomas of the U.S. Environmental Protection Agency.



### Ash Recirculation/Reinjection

As described, the ash recirculation/reinjection system used at Dominion Power's fossil fuel-fired plants is a continuous, closed-loop process that is an integral component of the overall combustion process designed for fuel optimization and efficiency. Specifically, you indicated that the ash recirculation/reinjection is part of the overall boiler process design and is used as a fuel optimization process that maximizes the carbon burnout in the ash—or put another way, maximizes the recovery of carbon from coal, the traditional fuel used by Dominion Power, which improves the efficiency of the boiler (reducing GHG emissions).<sup>2</sup>

An example was provided relating to some of the stoker units. In those units, ash material that is large/heavy enough (i.e., material that still has an abundance of unburned carbon) is captured from the economizers (which include mechanical dust separators) and returned to the furnace. The ash reinjection nozzles return this heavier material back to the furnace by carrier air (blowers) just above the boiler grates where the unburned carbon is burned in suspension. The heavy ash material that has been reinjected ends up being deposited on the stoker bed and is removed as bottom ash after recovery of energy of the unburned carbon. As described, this ash recirculation/reinjection process is a very effective fuel optimization system as it reduces unburned carbon loss, improves the efficiency of the boiler, and reduces carbon wear of the bags in the baghouse/air pollution control equipment. Other examples of ash recirculation/reinjection were provided relating to preheaters and a circulating fluidized bed boiler.

The NHSM rule identifies which NHSM are, or are not, solid wastes when used as a fuel or an ingredient in combustion units. In addition, the NHSM also identifies certain materials as traditional fuels.<sup>3</sup> The threshold question in evaluating the ash recirculation reinjection process is whether the ash material is the continual processing (for energy recovery) of coal or whether the ash material being re-circulated/re-injected is a secondary material. Secondary material is defined in the rule as "material

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<sup>2</sup> We note that this information was received after issuance of the final NHSM rule, and thus, the discussion in the preamble on CBOs at 76 FR 15510-11 does not specifically affect ash recirculation/reinjection as part of the utility boiler process. The burning of the carbon, however, falls within the regulatory definition of traditional fuel at 40 CFR 241.2.

<sup>3</sup> Traditional fuels are materials that are produced as fuels and are unused products that have not been discarded and therefore, are not solid wastes, including: (1) Fuels that have been historically managed as valuable fuel products rather than being managed as waste materials, including fossil fuels (e.g., coal, oil and natural gas), their derivatives (e.g., petroleum coke, bituminous coke, coal tar oil, refinery gas, synthetic fuel, heavy recycle, asphalts, blast furnace gas, recovered gaseous butane, and coke oven gas) and cellulosic biomass (virgin wood); and (2) alternative fuels developed from virgin materials that can now be used as fuel products, including used oil which meets the specifications outlined in 40 CFR 279.11, currently mined coal refuse that previously had not been usable as coal, and clean cellulosic biomass. These fuels are not secondary materials or solid wastes unless discarded. See 40 CFR 241.2.



that is not the primary product of a manufacturing or commercial process, and can include post-consumer material, off-specification commercial chemical products or manufacturing chemical intermediates, post-industrial material, and scrap” (40 CFR 241.2).

Based on the description provided, we believe the heavier ash material that has an abundance of unburned carbon, does not exit the enclosed ash recirculation process and is returned to the furnace for further energy recovery to produce additional electricity is not a solid waste, but is the continual processing of the traditional fuel coal used by Dominion Power in its boilers. That is, recirculating or reinjecting the coal containing ash material is an extension of the electricity producing operations, similar to stoker units and would not be considered a secondary material until the material exits the process or is otherwise discarded.

As the ash recirculation/reinjection processes described above do not involve combustion of a solid waste, these units would be subject to the section 112 Clean Air Act (CAA) standards.

#### **CBO Units**

As described, CBO units are typically located at or adjacent to the coal-fired utility. High-carbon fly ash, as described by Dominion Power,<sup>4</sup> generated at the utility is pneumatically conveyed from the power plant’s existing silos to the CBO silo. The CBO unit incorporates a fluidized bed that further recovers energy from the residual carbon from high-carbon fly ash.<sup>5</sup> Burning the high-carbon fly ash in CBO units generates sufficient heat to sustain combustion in the CBO unit without use of supplemental fuel other than as start up of the fluidized bed combustor unit. In addition, heat is recovered and transported back to the fossil fuel plant in the form of heated condensate or steam. Emissions from the CBO unit are also sent back to the utility, and combined with the utility boiler emissions, which are routed through the boilers’ air pollution control devices.

The preamble to the final NHSM rule included a discussion of these units (76 FR 15510).<sup>6</sup> The preamble indicated that high-carbon fly ash appeared to be a NHSM fuel that was burned to create both energy, as well as a marketable ingredient (low-carbon fly ash). EPA determined that the fly ash

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<sup>4</sup> As described in PMI’s April 19, 2011 letter, high carbon fly ash is a consequence of the lower flame temperatures and lower oxygen available in the flame required to lower NO<sub>x</sub> emissions.

<sup>5</sup> This process also creates a marketable low-carbon fly ash, which can be used as a replacement for Portland cement in concrete.

<sup>6</sup> The Agency solicited comment in the proposed rule on processes that separate carbon from fly ash for use of the fly ash in concrete (75 FR 31868), but only limited information was provided by the comments.



going into the unit was clearly not being used as an ingredient, but was used to produce an ingredient. The discussion noted commenter's statements that the CBO process removes 'unwanted carbon' from the fly ash, which may suggest that the fly ash is being burned as a waste activity (i.e., the destruction of the unwanted carbon in order to generate a marketable product).

Overall, from the available information, the Agency did not have sufficient information to understand the process fully (76 FR 15511), and thus, could not make a categorical determination in the preamble whether the carbon is being destroyed or being used for its fuel value, but noted that use of the high carbon fly ash may have more than marginal energy value and can be a source of additional power to the adjoining plant. The Agency further noted that it is appropriate for these units to consider the legitimacy criteria in making any discard determinations.

In evaluating the additional information you have submitted, the Agency examined the interpretation provided in the rulemaking record, including the preamble and all relevant information. Those interpretations were based on information available at the time of promulgation of the regulation. In this letter, based on the additional information you have provided, the Agency is providing a more definitive interpretation.

Similar to the ash recirculation process, the threshold question is whether the high-carbon ash material used in the CBO unit is the continual processing (for energy recovery) of coal or whether the ash material fed to the CBO unit is a secondary material. Based on the description discussed above and the new detailed information provided, the CBO unit appears to be interdependent and fully integrated with the host fossil fuel power plant. That interdependency includes the use of plant process fluids (e.g., low-pressure condensate) for cooling the CBO process gas and product ash, the use of host air pollution control equipment for treating CBO exhaust gases, and, as discussed in the NHSM preamble, the beneficial use of heat that is generated and recovered in the CBO units for efficiency improvement in the host. Accordingly, the CBO unit would be considered an extension of the overall coal-fired utility combustion process. The high-carbon ash material would not be considered a secondary material, but is continual processing of the traditional fuel coal used by Dominion Power, until after the remaining carbon is recovered for its fuel value and the low-carbon ash exits the electricity generating process.

Thus, like the recirculation/reinjection processes, the CBO units described above do not involve combustion of a solid waste, and thus, these units would be subject to the section 112 CAA standards. This interpretation is based on the information you provided to us. If there is a discrepancy in the information provided to us, it may result in a different interpretation.



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Thank you for your continued interest in this issue. If you have further questions, you may contact me or George Faison of my staff at [faison.george@epa.gov](mailto:faison.george@epa.gov) or 703-305-7652.

Sincerely,

A handwritten signature in cursive script, appearing to read "Suzanne Rudzinski".

Suzanne Rudzinski, Director  
Office of Resource Conservation and Recovery

cc: Lisa Cooper, PMI Ash Technologies LLC  
Kimberly Lanterman, Dominion Resources Services Inc.