



## UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

77 WEST JACKSON BOULEVARD

CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

L-8J

NOV 14 2011

Mr. James S. Rickun  
James S. Rickun Environmental Consulting  
4933 Black Oak Drive  
Madison, Wisconsin 53711-4373

Dear Mr. Rickun:

In your letter of June 11, 2011, and follow-up letter of June 22, 2011, you requested confirmation from the U.S. Environmental Protection Agency Region 5 that Greenwood Fuels LLCs' fuel pellets would not be considered a solid waste when burned in a combustion unit in accordance with the requirements in 40 C.F.R. § 241.3(b)(4). To be designated as a non-waste fuel under that section, the rule requires that processing of the non-hazardous secondary material (NHSM) meets the definition of processing in 40 C.F.R. § 241.2. Also, after processing, the NHSM must meet the legitimacy criteria in 40 C.F.R. § 241.3(d)(1) to be designated a non-waste fuel. Based on the information provided in your letter and supporting materials, we believe the 40 C.F.R. Part 241 regulations would identify the fuel pellets generated by Greenwood Fuels, LLC and burned in combustion units as a non-waste fuel.<sup>1</sup> The remainder of this letter provides the basis for our position. *If there is a discrepancy in the information provided to us, it could result in a different interpretation.*

#### Processing

Processing is defined in 40 C.F.R. § 241.2 as operations that transform discarded NHSMs into a non-waste fuel or non-waste ingredient, including operations necessary to: remove or destroy contaminants; significantly improve the fuel characteristics, e.g. sizing or drying of the material in combination with other operations; chemically improve the as-fired energy content; or

<sup>1</sup> Note that a non-waste determination under 40 C.F.R. Part 241 does not preempt a state's authority to regulate a non-hazardous secondary material as a solid waste. Non-hazardous secondary materials may be regulated simultaneously as a solid waste by the state, but as a non-waste fuel under 40 C.F.R. Part 241 for the purposes of determining appropriate emissions standards under the Clean Air Act for the combustion unit in which it is used.

improve the ingredient characteristics. Minimal operations that result only in modifying the size of the material by shredding do not constitute processing for purposes of the definition.

In your letters, you state that the feedstock materials accepted by Greenwood Fuels include a variety of industrial off-spec materials, misprints, excess ends, etc., from a variety of paper, packaging, non-woven, and wood working industries. As you note in your letters, the fact that no post-consumer material is used limits the contamination present in the material. These fiber and polymer-based materials are separated by type, shredded, mixed, cleared of metals, mixed and shredded again, and then densified and shaped into pellets of uniform shape and consistency. The fuel pellets are one and one-half (1 ½) to two (2) inches in size, which makes them suitable for use in existing coal-fired stoker boilers as a substitute for coal.

Based on this description---that is, pre-shredding and pre-mixing to improve the fuel characteristics, removing metal to reduce contaminants, further mixing and re-shredding the feedstock materials to improve the fuel characteristics of the finished material thereby achieving a specified BTU range, and pelletizing the finished material into a homogenous fuel product for use in coal-fired stoker boilers as a replacement for coal, we believe the definition of processing in 40 C.F.R. § 241.2 has been met.

#### Legitimacy Criteria

Under 40 C.F.R. § 241.3(d)(1), the legitimacy criteria for fuels includes: 1) management of the material as a valuable commodity based on the following factors – storage prior to use must not exceed reasonable time frames and management of the material must be in a manner consistent with an analogous fuel, or where there is no analogous fuel, adequately contained to prevent releases to the environment; 2) the material must have meaningful heating value and be used as a fuel in a combustion unit that recovers energy; and 3) the material must contain contaminants at levels comparable to or less than those in traditional fuels which the combustion unit is designed to burn.<sup>2</sup> The term contaminants is defined in 40 C.F.R. § 241.2 as constituents in the NHSM that will result in emissions of air pollutants under Clean Air Act Section 112(b) or the nine pollutants listed under Clean Air Act Section 129, including those constituents that could generate products of incomplete combustion.

#### *Manage As A Valuable Commodity*

Regarding the first legitimacy criterion, you state that the fuel pellets are stored at Greenwood's facility in either silos or bunkers, which are covered and have sidewall containment, for up to three (3) days prior to being shipped off-site. The facility has a Storm Water Pollution Prevention Plan to prevent storm water run-off. Furthermore, you indicate that the one and one-

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<sup>2</sup> The legitimacy criteria would apply once the pelletized fuel is produced; it would not apply to the input material to the processing operation.

half (1 ½) to two (2) inch fuel pellets contain few fines, such that wind-blown dust is not an issue. You also state that the storage and transportation requirements for Greenwood's fuel pellets are almost identical to coal storage and handling. The pellets are shipped to the customer within one (1) to three (3) days of production via coal dump trailers, walking floor trailers, or rail, as is typical for coal. Combustion facilities receiving the pellets either store the pellets in dedicated storage areas or mix the pellets with coal upon their receipt at the facility. Storage locations may be inside or outside. You indicate that although the majority of pellets are consumed within twenty-four (24) hours of delivery, some customers mix the pellets with coal, and most of those customers store pellets for no more than one (1) week, which is typical for coal storage.

Based on this information, we believe the material is managed as a valuable commodity: storage does not exceed a reasonable time frame and storage in silos or bunkers is adequate to prevent releases. Also, management of the pellets by the combustion unit appears to be analogous to the management of coal that is burned as a fuel.

#### *Meaningful Heating Value and Use As A Fuel In A Combustion Unit That Recovers Energy*

Regarding the second legitimacy criterion, you state that the fuel pellets contain an average of 10,470 Btu/pound, which is derived from weekly analyses (occurring between January and May of 2011) provided by an independent, certified lab. As discussed in the final rule, 5,000 Btu/pound was established as a general guideline for meaningful heating value. In addition, coal-fired stoker boilers would recover energy from the use of this material as a non-waste fuel. Thus, the material meets this criterion.

#### *Comparability of Contaminant Levels*

Regarding the third criterion, you provided data on the average concentration of specified contaminants in Greenwood's pellets from weekly lab tests occurring between January and May of 2011, and you compared those levels to the contaminant data for coal as outlined in the materials characterization paper (MCP) "Traditional Fuels and Key Derivatives."<sup>3,4,5</sup> (See

<sup>3</sup> The Materials Characterization Paper on *Traditional Fuels and Key Derivatives* can be found at [www.epa.gov/epawaste/nonhaz/define/index.htm](http://www.epa.gov/epawaste/nonhaz/define/index.htm).

<sup>4</sup> EPA notes that the contaminant values listed in the *Traditional Fuels and Key Derivatives* MCP for coal (and other traditional fuels) may be revised in the future based on the availability of new or additional data. Any future revisions to the values will not impact the conclusions made in this letter; the values are based upon the data that is available at the time EPA responds to a request.

<sup>5</sup> You may use other data on the contaminant levels in traditional fuels in determining whether the levels are comparable to Greenwood's pellets. That is, other data on the level of contaminants in traditional fuels that your company has or may become aware of may also be considered in determining whether the level of contaminants

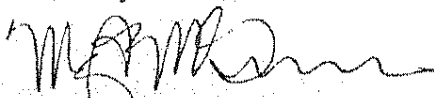
attached Table.) Please note that only those constituents identified in the contaminant definition under § 241.2 are relevant with respect to meeting the contaminants legitimacy criterion.

As indicated in your attached Table, the fuel pellets meet the legitimacy criterion for these contaminant levels when compared to coal, the traditional fuel that the combustion unit is designed to burn.<sup>6</sup> This conclusion is based only on the constituents you identified in your laboratory analysis. We presume that additional contaminants are present at levels comparable to or less than those in coal, based on your knowledge of the NHSM.

Overall, based on the information provided in your letter, and given the assumptions and data limitations outlined in this letter, the fuel pellets meet both the processing definition and the legitimacy criteria outlined above. Accordingly, we would consider this NHSM a non-waste fuel under the 40 C.F.R. Part 241 regulations.

If you have any other questions, please contact Julie Gevrenov of my staff at 312-886-6832.

Sincerely,



Margaret M. Guerriero

Director

Land and Chemicals Division

Enclosure

cc: George Faison, EPA/ORCR  
Ethan Chatfield, EPA R5/ARD  
Stuart Hersh, EPA R5/ORC  
Dan Harris, Ohio EPA

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in Greenwood's pellets are comparable to those in the traditional fuel that the combustion unit is designed to burn.

<sup>6</sup> The term "volatiles" is not related to the term "volatile organic compound (VOC)" and is not pertinent to the definition of "contaminants" specified in §241.2. Instead, the term "volatiles" comes from a proximate analysis of fuels, a common test performed to characterize fuels by determining percentages for moisture, volatiles, ash, and fixed carbon that add up to 100 percent. In such an analysis, a sample is weighed, burned at a specified temperature, and weighed again. The percent weight difference is called "volatiles" and includes any gases or vapors driven off at the specified temperature, a large portion of which is likely to be non-contaminants.

EPA Material Characterization Sheet, Feb. 07, 2011 Component	As-received Basis Units	Coal-Int'l	Anthracite (Lackawanna, PA) <sup>2,3</sup>	Bituminous (Marion, WV) <sup>2,3</sup>	Sub-bituminous (Sheridan, WV) <sup>2,3</sup>	Lignite (McLean, ND) <sup>2,3</sup>	GWF Pellets Avg.	Coal Bituminous Avg. <sup>4,10</sup>	Coal Bituminous Range <sup>4</sup>	Coal Sub-bituminous Avg. <sup>4,10</sup>	Coal Sub-bituminous Range <sup>4</sup>
		Avg (Range) <sup>1,2,3</sup>									
Moisture	wt%	5.2 (17) (1.7)	5.3	2.3	22.2	36.8	6.0				
Volatiles	wt%	37.8 (7.9-55.4) (3.4)	4.1	36.5	33.2	27.8	80.9	2.3		22.2	
Ash	wt%	3.4 (2.9-17.7)	9.6	5.2	4.3	5.9	6.5	5.2		4.3	
Calorific Value, HHV	Btu/lb	13,925 (11,277-19,342)									
Calorific Value, LHV	Btu/lb	13,466 (10,826-14,891)	12,880	14,040	9,600	7,000	10,470				
<b>Elemental Analysis</b>											
Carbon	%	78.3 (50.5-91.0) (4.32)	79.7	78.4	53.9	40.8	6.4				
Hydrogen	%	4.32 (3.5-5.83) (13.2)	2.9	5.5	8.9	6.9	7.5				
Oxygen	%	13.2 (2.3-33.7) (1.41)	8.1	8.5	33.4	45.1	25.0				
Nitrogen	%	1.41 (0.75-1.91) (1.38)	0.9	1.6	1.0	0.6	0.2	1.27	0.88-1.54	0.78	0.70-0.91
Sulfur	%	1.38 (0.31-5.79)	0.8	0.8	0.5	0.9	0.1	1.97	0.58-4.36	0.77	0.21-1.94
<b>Chemical Composition</b>											
Chlorine	ppm	1,440 (30-7380) (160)					801	1,240	100-3,500	140	10-398
Fluorine	ppm	180 (130)						59.8	5-158	62	44-66
Bromine	ppm										
Aluminum	ppm	8,862 (146-15,900) (8)									
Arsenic	ppm	5 (5-11)		0.5-80			0.79	4,419	0.48-17	0.913	0.4-1.7
Boron	ppm	47									
Barium	ppm	290									
Beryllium	ppm						0.05	1,353	0.013-4.0	0.377	0.1-0.9
Calcium	ppm	3,750 (1,800-5,700) (0.8)									
Cadmium	ppm	1.0 (0.5)		0.1-3.0			0.040	1,131	0.011-5.47	0.147	0.1-0.4
Cobalt	ppm	3.3 (2.0-4.5)		0.5-30.0				6,512	0.056-40.9	1,703	1.2-2.9
Chromium	ppm	10 (2.0-18.0)		0.5-80.0				15,669	2.5-121.3	5,597	1.6-11.3
Copper	ppm	20 (17-23) (4,315)									
Iron	ppm	2,940 (5,900)									
Mercury	ppm	2 (1,685)		0.1-1.8			<0.01	0,161	0.02-0.75	0,056	0.04-0.07
Potassium	ppm	1,180 (140-3,810)									
Magnesium	ppm	1,180 (800-1,500)									
Manganese	ppm	132 (53-210)		5-300				25,977	7-223	10,926	3.9-25.3
Molybdenum	ppm	1.8 (1.5-2.0) (723)									
Sodium	ppm	300 (1,420)									
Nickel	ppm	10 (3-17) (245)		0.5-50			0.63	15,363	2.26-34	4,859	2.1-15.0
Phosphorus	ppm	14 (160-330) (7.4)						161,921	0.066-1,400	213,051	151-332
Lead	ppm	20 (2.0)		2.0-80.0			0.36	0,398	1.24-32	1,518	0.9-2.4
Antimony	ppm	3 (0.05-10)		0.05-10			4.21	11,070	0.027-235	0,146	0.1-0.2
Selenium	ppm	2 (2-10)		2-10			0.430	2,162	0.42-6.48	1,197	0.5-2.2
Silicon	ppm	18,950 (17,900-20,600)									
Tin	ppm	1.2									
Strontium	ppm	95									
Tellurium	ppm	450									
Titanium	ppm	17									
Vanadium	ppm	15 (7-27)									
Zinc	ppm	15 (14-15)									

Notes: 1. See EPA Material Characterization Paper for description of tonnage and other general information, Feb. 2011  
 2. See Wood Fuel pellet analysis data based on weekly samples/analysis, Jan., 2011 to May, 2011

