



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

DEC 15 2011

REPLY TO THE ATTENTION OF:

Sandra Diorka
Director of Public Services
Delhi Charter Township
2074 Aurelius Road
Holt, Michigan 48842-6320

Dear Ms. Diorka:

In your letter of June 16, 2011, you requested confirmation from the U.S. Environmental Protection Agency that sludge pellets burned in combustion units are non-waste fuels in accordance with the requirements in 40 CFR part 241.3(b)(4). To be designated as a non-waste fuel under that section, the rule requires that processing of non-hazardous secondary material (NHSM) meets the definition of processing in 40 CFR 241.2. Also, after processing, the NHSM must meet the legitimacy criteria for fuels in 40 CFR 241.3(d)(1). Based on the information provided in your letter and supporting materials, including analytical results submitted August 2, 2011 and August 15, 2011, we believe the 40 CFR part 241 regulations would identify the proposed sludge pellets that will be generated by the Delhi Charter Township (or Township) Wastewater Treatment Plant and burned in combustion units as a non-waste fuel.¹ 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 CFR 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 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 letter, you state that the Township plans to expand the processing operations at the wastewater treatment plant to create a biofuel product from its wastewater treatment sludge. The expanded process will involve removing rags and screening out solid contaminants larger than 3 mm in size; removing inorganic grit, which results in the removal of some heavy metals;

¹ 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.

subjecting the sludge to anaerobic digestion, which will generate Class A biosolids (the highest sludge classification) and remove volatiles and pathogenic organisms; dewatering the digested sludge, via the use of a water treatment polymer, to increase solids to approximately 20 percent; and drying and milling via solar drying in a greenhouse and mechanical tumbling, to create a final pelletized fuel product with a total solids content of at least 75 percent. In addition, the Township has a number of programs in place designed to limit the introduction of pollutants, such as mercury, pharmaceuticals, household hazardous waste, and heavy metals from industry into the wastewater stream in the first place.

Based on this description—that is, removal of contaminants (i.e., reduction in heavy metals via grit removal and reduction of volatiles via anaerobic digestion) and improvement of its fuel characteristics (i.e., removal of large solids and grit, removal of water to improve the as-fired energy content, and sizing of the material to allow it to be handled and fed to the boiler “as is”), we believe the process used to produce sludge pellets meets the definition of processing in 40 CFR 241.2.

Legitimacy Criteria

Under 40 CFR 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 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.

Manage As A Valuable Commodity

Regarding the first criterion, you state that the sludge pellets will be stored in a dry bunker until a quantity sufficient for transport accumulates—this may occur as often as multiple times daily or as little as every few months. The sludge pellets will be transported to the combustion facility in covered containers/trucks, offloaded onto the combustion facility’s covered coal containment floor, mixed with coal, and burned within 24 hours of delivery. The sludge pellets will be sold to the combustion facility at a price that reflects their Btu content and the cost of processing the material.

Based on this information, we believe the sludge pellets² are managed as a valuable commodity: storage does not exceed a reasonable time frame and storage in dry bunkers is adequate to prevent releases. Also, management of the sludge pellets by the combustion unit appears to be analogous to the management of coal that is burned as a fuel.

Meaningful Heating Value and Used As A Fuel to Recover Energy

Regarding the second legitimacy criterion on meaningful heating value, you state that the sludge pellets will have an as-fired heating value greater than 5,000 Btu/pound, depending on the solids content of the final product. As discussed in the final rule, 5,000 Btu/pound was established as a general guideline for meaningful heating value. You submitted analytical data for one sample of sludge pellets containing the water treatment polymer (no fine screening step) and eight samples of sludge pellets from your current process (no fine screening step or addition of water treatment polymer). Because the sample containing the water treatment polymer more closely resembles the sludge pellets, we considered that sample as a proxy for the sludge pellets. The analytical data submitted on August 2, 2011 for this sample indicates a heating value of 6,500 Btu/pound on a dry basis which, according to Table 1 in your June 16, 2011 letter, translates to 5,200 Btu/pound if the sludge pellets are 80 percent solids content and 5,850 Btu/pound if the sludge pellets are 90 percent solids content. Your letter indicates that the typical product dryness will range between 80 percent and 90 percent solids content.

Based on this information, the sludge pellets will meet this criterion only if the solids content of the sludge pellets is sufficiently high to result in an as-fired heating value of at least 5,000 Btu/pound and if the sludge pellets are burned in a combustion unit that recovers energy, such as a combined heat and power plant.

Comparability of Contaminant Levels

Regarding the third criterion on contaminant levels, your letter requested confirmation that the sludge pellets meet the contaminant level criterion when compared to coal. You submitted analytical data from several samples of sludge pellets using your current process (no fine grit removal or addition of water treatment polymer), as well as analytical data for one sample of sludge pellets containing the water treatment polymer. Because the sample containing the water treatment polymer more closely resembles the sludge pellets, we considered that sample as a proxy for the sludge pellets. Please note that only those constituents identified in the contaminant definition under section 241.2 are relevant with respect to meeting the contaminants legitimacy criterion. For example, you indicated that both copper and silver show higher levels of contaminants than found in coal, but you believe they are still present at comparable levels, as

² As noted in the regulations, prior to final processing (drying and milling), the processed sludge may be considered a solid waste and is subject to appropriate federal, state, and local regulations.

defined under the regulations. Since neither copper nor silver are defined as contaminants under the Part 241 regulations, EPA did not consider them in our evaluation. Therefore, from the analytical data you submitted on August 2, 2011, we evaluated only those constituents identified under section 241.2 and as outlined in the materials characterization paper “Traditional Fuels and Key Derivatives.”^{3,4,5}

As indicated in the enclosed table, the sludge pellets meet the legitimacy criterion for contaminant levels when compared to coal. Regarding the total fluorine data you submitted on August 15, 2011, we also note that due to the water content of the sludge, the laboratory reporting limit on a dry weight basis for total fluorine exceeds the level of fluorine found in coal as reported in the referenced Materials Characterization Paper. The conclusion that the sludge pellets meet the contaminant legitimacy criterion, therefore, presumes that the actual level of fluorine, as well as additional constituents for which the sludge pellets were not tested, are present at levels comparable to or lower than those in the appropriate traditional fuel, based on your knowledge of the material.

Overall, based on the information provided, we believe that the sludge pellets that will be generated by the Township’s wastewater treatment plant, as described in your June 16, 2011 letter and materials submitted on August 2, 2011, and August 15, 2011, meet both the processing definition and the legitimacy criteria outlined above. Accordingly, we would consider this NHSM a non-waste fuel under the 40 Part 241 regulations.

³ The Materials Characterization Paper on *Traditional Fuels and Key Derivatives* can be found at www.epa.gov/epawaste/nonhaz/define/index.htm.

⁴ 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.

⁵ You may use other data on the contaminant levels in traditional fuels in determining whether the levels are comparable to the Township Wastewater Treatment Plant sludge pellets. That is, other data on the level of contaminants in traditional fuels that your Township has or may become aware of may also be considered in determining whether the level of contaminants in the Township’s Wastewater Treatment Plant sludge pellets are comparable to those in the traditional fuel that the combustion unit is designed to burn.

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

Sincerely,

A handwritten signature in black ink, appearing to read 'M. Guerriero', written in a cursive style.

Margaret M. Guerriero

Director

Land and Chemicals Division

Enclosure

cc: The Honorable Carl Levin, United States Senate
George Faison, EPA/ORCR
Ethan Chatfield, EPA R5/ARD
Stuart Hersh, EPA R5/ORC
Duane Roskoskey, MDEQ

Enclosure: Contaminant Levels in Sludge Pellets

Constituent	Units	Measured Concentration in Sludge Pellets (containing water treatment polymer) (dry-weight basis), from 7/6/11 and 8/10/11 ALS Environment Reports	Maximum Values for Coal in EPA's Materials Characterization Paper <i>Traditional Fuels and Key Derivatives</i>	Note
antimony	mg/kg	2.5	235	
arsenic	mg/kg	8.8	80	
beryllium	mg/kg	< 0.63 (ND)	15	(non-detect at 0.63 mg/kg-dry reporting limit)
cadmium	mg/kg	2.8	5.47	
chromium	mg/kg	74	121.3	
cobalt	mg/kg	2.5	40.9	
lead	mg/kg	11	80	
manganese	mg/kg	260	300	
mercury	mg/kg	1.3	2	
nickel	mg/kg	13	50	
selenium	mg/kg	5.9	10	
total chlorine	ppm	< 2,500 (ND)	7,380	(non-detect at 0.25 wt%-dry)
total fluorine	ppm	< 1,250 (ND)	180	(non-detect at 0.030 wt%, with moisture measured at 76% of sample)
total nitrogen	mg/kg	42,000	54,000	the maximum value shown for nitrogen (54,000) is from the QAQPS emissions database for boilers & process heaters, version 6
total sulfur	ppm	11,100	43,600	(measured as 1.11% total sulfur on dry basis)
extractable organic halides	µg/g	< 160 (ND)	no data	(non-detect at 160 µg/g as Cl-dry reporting limit)
semi-volatile organic compounds	µg/kg	< 2,580 (ND)	no data	(non-detect for 18 compounds with individual reporting limits < or = 330 µg/kg-dry)