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ENVIRONMENTAL SERVICES
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KA 263-11-13
February 23, 2012

Via E-Mail and U.S. Mail
jeff.koerner@dep.state.fl.us

Mr. Jeff Koerner
Permitting/Compliance Administrator
Division of Air Resource Management
Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL32399

RE: Response to Request for Additional Information
CEMEX Construction Materials Florida, LLC
Miami Cement Plant
Project No. 0250014-045-AC

Dear Mr. Koerner:

Please find enclosed the response information to your Request for Additional Information (RAI) letter dated January 20, 2012 regarding the permit application for the installation of equipment necessary for the preparation and injection of alternative fuel materials at the CEMEX Construction Materials Florida, LLC Miami cement plant submitted to your office via email on December 16, 2011 and submitted in hardcopy. In overview of this project, CEMEX intends to carefully use alternative fuels, not waste, to replace fossil fuels. While these materials come from a variety of resources, CEMEX will not incinerate waste. This project mirrors projects in Florida and throughout the developed world (e.g., European Union, Canada, Australia) to reduce the consumption of fossil fuels. CEMEX is fully committed to this project and will provide any and all information needed for approval.

CEMEX puts forth the following points that demonstrate the value of this project to the State of Florida and the environment. The project provides the following benefits:

1. Increases the availability and stability of energy sources through the use of locally generated, processed, and transported energy sources in comparison to conventional fuels

(i.e., coal which can be and is transported from around the world to this plant and other cement plants).

2. Promotion of related recycling and recovery business activities (i.e., employment, taxable income) in the State.

3. Reduction of greenhouse gas emissions by re-using and reducing landfilled biogenic material, reducing source material transportation, and reducing methane emissions from landfilled materials.

4. Increased demand for recovered materials as fuel encourages recovery versus landfilling. This matches the goals of the State efforts to increase waste diversion for re-use or recycling,[1]

5. Promotion of a more diverse energy supply which improves the viability of CEMEX and the alternative fuels market suppliers.

Most important, our application provides data that these fuels will not significantly change emissions. To this point, EPA states on May 17, 2011 in the Federal Register, "...burning alternative fuels does not appreciably affect cement kiln HAP's emissions." The practice of using alternative fuels in cement kilns is well documented for over 40 years. Both U.S. EPA and European Union continue to promote the use of alternative fuels for cement kiln in preference to fossil fuels.[2,3] A Portland cement plant can only produce a marketable product through efficient thermal combustion of alternative fuels in a cement kiln that not only utilizes materials for their heat content that would otherwise have been landfilled, but the ash also supplies essential ingredients (silica, aluminum, calcium, iron, etc.) that becomes a component of the final product (cement) and must be carefully monitored. The use of alternative materials in cement production can safely eliminate a substantial amount of potentially landfilled waste, as well as reduce environmental impacts associated with mining and transport of fossil fuels. Similarly,

[1] http://www.dep.state.fl.us/waste/recyclinggoal75/default.htm (last visited April 18. 2011)
[2] EPA Cement Sector Report, Trends in Beneficial Use of Alternative Fuels and Raw Materials. October 2008.
[3] Cement, Lime and Magnesium Oxide Manufacturing Facilities, May 2010 http://eippcb.jrc.ec.europa.eu

can safely eliminate a substantial amount of potentially landfilled waste, as well as reduce environmental impacts associated with mining and transport of fossil fuels. Similarly, greenhouse gas emissions are reduced by eliminating landfilling, which generates methane gas as a byproduct of anaerobic decomposition. The greenhouse gas potential of methane is 21 times greater than that of the carbon dioxide produced during combustion.

CEMEX views its effort to promote the beneficial reuse of these recovered materials in cement production to be in concert with the guidance of the EPA[4] and European IPPC Bureau[5]. The World Business Council for Sustainable Development ranks the United States as 13th in the list of countries replacing conventional fuels with alternative fuels[6]. In 2010, German cement plants replaced conventional fuels with alternative fuels by 61 percent[7] on average. Thus, fossil fuels may some day soon become alternative fuels.

Please feel free to contact me at (352) 377-5822 or mlee@koogglerassociates.com if you have any questions regarding this submittal. I sincerely appreciate your time and consideration for this innovative project.

Regards,
KOOGLER AND ASSOCIATES, INC.

Max Lee, PhD., P.E.

cc: Lillian F. DePrimo, Director, Environmental (lillianf.deprimo@cemex.com)
Luis Lopez, Plant Manager (luisguillermo.lopez@cemex.com)
Charles Walz, Environmental Manager (charles.walz@cemex.com)

[4]International, I.*Trends in Beneficial Use of Alternative Fuels and Raw Materials*. 2008; Availablefrom:http://www.epa.gov/sectors/pdf/cement-sector-report.pdf.
[5] Cement, Lime and Magnesium Oxide Manufacturing Facilities, May 2010, Table 4.16, http://eippcb.jrc.ec.europa.eu
[6]Development, W.B.C.f.S., *Guidelines for the Selection and Use of Fuels and Raw Materials in the Cement Manufacturing Process*, 2005, http://www.wbcsd.org/DocRoot/Vjft3qGjo1v6HREH7jM6/tf2-guidelines.pdf (last visited April 2, 2011)
[7]Verein Deutsche Zementindustrie, Environmental Data of the German Cement Industry 2009, http://www.vdz-online.de/uploads/media/Environmental_data_2010.pdf (last visited December 2, 2011)

1. Please provide the certified analysis of the off-specification used oil fired at the Miami Cement Plant. Provide the total annual amount of off-specification used oil fired over the past five years.

The CEMEX Miami cement plant is permitted through the Title V air permit to use off-specification fuel oil , which is a non-hazardous fuel. The facility obtains off-spec fuel oil from various vendors. Off-spec fuel oil that is received is typically deemed off-specification due to its lower flash point (< 100 °F) which is a result of gasoline contamination in fuel oil. The amount annual usages from 2007 to 2011 are provided in Attachment 1 along with CEMEX internal analysis from the shipment on January 15, 2012. As well, vendor material analysis are provided in Attachment 1. The CEMEX Miami cement plant is compliant with the other regulatory programs related to off-spec used oil.

2. Please describe what animal meal is. Provide further information on the animal meal, including any classifications (ex. 1, 2 or 3), heating value and metals content.

Animal meal is also known as meat and bone meal (MBM) which is derived from animal rendering facilities. This material may then be wasted to landfills[8]. Several alternative uses of this material exist such as the utilization in cement kilns and the co-combustion in industrial power plants[9]. MBM is considered a carbon/CO_2 neutral fuel. It can reduce the amount of greenhouse gases emitted from burning of fossil fuels at the Miami cement plant. In fact, if 40% of the coal fed to a rotary kiln was replaced on a long term basis, the total annual CO_2 emissions from the cement plant could be reduced near 10%[2]. As discussed in the application, air pollutant emissions from such material are expected to be similar to fossil fuels.

Table 1 below presents typical parameters and metals content of MBM. In comparison, data are provided in Table 2 that show the potential range of similar parameters/constituents within coal.

Table 1. Characteristics of Animal Meal

reference	LHV *mmBtu/ton*	Density *kg/m³*	Moisture *%*	Ash *%*	Sulfur *%*	Fluoride *%*	Chlorine *%*	Volatile *%*
[10]	15.9	720	4	27.2	--	--	--	60.8
[11]	12.4	--	6	20	0.4	--	0.3	64

[8] http://en.wikipedia.org/wiki/Meat_and_bone_meal

[9] Fryda, L., Panopoulos, K., Vourliotis, P., Kakaras, E., Pavlidou, E. "Meat and bone meal as secondary fuel in fluidized bed combustion." Proceedings of the Combustion Institute 31 (2007) 2829-2837

[10] Ariyaratne, W.K.H., Melaaen, M.C., Eine, K., Tokheim, L.A. "Meat and Bone Meal as a Renewable Energy Source in Cement Kilns: Investigation of Optimum Feeding Rates." International Conference on Renewable Energies and Power Quality (2010)

[11] Senneca, O., Salatino, P., Chirone, R. "Co-Firing of Coal and Meat and Bone Meal." Third European Combustion Meeting ECM (2007)

[12]	11.2	--	6.8	34.4	0.7	--	0.26	32.7
[13]	16.0	--	--	15.3	0.63	0.01	0.95	--

LHV- Lower Heating Value

	Hg *ppm*	**As** *ppm*	**Cd** *ppm*	**Cr** *ppm*	**Pb** *ppm*	**Mn** *ppm*	**Ni** *ppm*	**Co** *Ppm*
10	--	--	--	--	--	--	--	--
[11]	--	--	--	1	10	8	0	2
[12]	<0.003	<25	<5	<5	<5	<5	<5	--
[13]	--	6.3	--	6.5	2.7			

Table 2.Upper range of characteristics of world-wide coal.

					Sulfur *%*	**Fluoride** *ppm*	**Chlorine** *ppm*	
[14]					17.3	4,900	8,800	

	Hg *Ppm*	**As** *ppm*	**Cd** *ppm*	**Cr** *ppm*	**Pb** *ppm*	**Mn** *ppm*	**Ni** *ppm*	**Co** *Ppm*
14	63	2,200	160	200	1,900	2500	280	180

3. The application requests authorization to fire non-infectious "hospital materials". Are "hospital materials" treated hospital wastes? Describe the treatment process. Provide a discussion of the applicability of NSPS Subpart Ec in 40 CFR 60 for Hospital/Medical/Infectious Waste Incinerators.

NSPS Subpart Ec does not apply to the CEMEX Miami cement plant. Further, CEMEX will not accept untreated hospital waste at the Miami cement plant and will only use sorted, processed, and treated hospital materials that are not waste.

Any fuel materials derived from hospitals will be processed to remove unwanted materials and enhance the homogeneity and the consistency of the fuel. These materials will be a minor component of an engineered fuel composition and must meet internal composition and properties

[12]Gulyurtly, I., Boavida, D., Abelha, P., Lopes, M.H., Cabrita, I. "Co-combustion of coal and meat and bone meal." Fuel 84 (2005) 2137-2148
[13]KEMA: Milieueffectrapport, bijstokensecundairebrandstoffen in de CentraleMaasvlakte, KEMA, Arnhem, 9856650-KST/MVC 98-3049 (1999).
[14]USGS Coal Database- http://energy.er.usgs.gov/coalqual.htm

criteria to emissions, product quality, and kiln structure integrity impacts (e.g., low chlorine content). For a number of other concerns, and as noted in the notice of application, requested FDEP to specifically note in the notice of application that CEMEX will not use hospital materials or waste that have been deemed as infectious. CEMEX is not in the business of waste disposal. CEMEX does view that certain materials that are derive from hospitals which do meet the criteria to be used as alternative fuels should not be wasted and landfilled but should be harnessed in a controlled and regulated environment. The materials must be treated and processed such that the material is not a health hazard and meets all regulatory limitations. The material must be sorted for materials with valuable heat content, low levels of unwanted constituents (e.g., chlorine and sulfur, volatile metals, alkalies). Materials that meet these criteria are typically non-chlorinated plastics.

At the time of shipment to the facility, these materials will have been processed and blended (typically in very minor quantities) to a specified engineered fuel and will not be treated nor considered as wastes. Instead, the engineered fuel is a commodity and it will be treated as such. These materials will be handled and stored as fuel materials to meet all permitting requirements.

NSPS Subpart Ec in 40 CFR 60.50(g) states that "Cement kilns firing hospital waste and/or medical/infectious waste are not subject to this subpart." Such cement kilns, like the Miami cement plant, are regulated under the NSPS Subpart F and NESHAP Subpart LLL.

As noted in the permit, EPA states on May 17, 2011 in the Federal Register, "...burning alternative fuels (whether classified as solid wastes or not) does not appreciably affect cement kiln HAP's emissions."[15] Such plastic-based materials are materials that EPA reviewed in making this statement.

4. Please provide applicability discussion for bio-solids and sewage sludge incineration with regard to NESHAP Subpart E in 40 CFR 61. Please provide a representative analysis for bio-solids (heating value and metals).

CEMEX is not a sludge waste incinerator. Regarding alternative fuels, CEMEX will only use processed sludge as an alternative fuel that results from a sludge drying process. These material are considered biosolids. If such a material is to be used it will be a minor portion of an engineered fuel. A typical source of such material is NEFCO (www.NEFCObiosolids.com) which produces material used for farming land application. It should be noted that due to recent land application issues, this material will likely be landfilled in the near future. Yet, this material has valuable heating value and composition that is equivalent to fossil fuels. And unlike boilers or other combustors, precalciner cement kilns well absorb nearly all metals (except for volatile

[15] Fed. Reg. Vol 76. No. 95, page 28322

metals such as mercury) as discussed in depth in the application. On that note, the Department brings forth an issue that should be addressed regarding mercury emissions and how the NESHAP Subpart E compares to current emission limitations on the Miami cement plant.

NESHAP Subpart E (40 CFR 61) is applicable to those stationary sources which process mercury ore to recover mercury, use mercury chlor-alkali cells to produce chlorine gas and alkali metal hydroxide, and incinerate or dry wastewater treatment plant sludge. This subpart E limits mercury emissions to the atmosphere to 7.1 pounds per day. Based on operation of 365 days this limit is equivalent to emissions of up to 2,591.5 pounds per year. already must carefully monitor mercury content of fuels. Biosolids having high mercury content will be avoided at the plant as the current limits on mercury emissions forces CEMEX to only use materials having low mercury content similar to currently used raw materials and fossil fuels. Furthermore, the NESHAP subpart LLL will require a continuous emissions monitor of mercury in 2013.

In our review of this regulation and other regulations of the Portland cement industry, there are several factors which ensure that this facility should not be duplicatively regulated under this older NESHAP but instead remain subject to NESHAP subpart LLL and current Title V air permit limits. The Miami cement plant is limited to far lower limits of mercury emissions under the current Title V air permit.

FDEP permits state that when there are duplicative regulations, the most stringent conditions apply. For example, the CEMEX Brooksville South cement plant Title V permit states:

> **F.1.** Exemption From Multiple Federal Requirements. Portland Cement Line 1 is an affected facility subject to the provisions of 40 CFR 63, Subpart LLL. If an affected facility subject to 40 CFR 63, Subpart LLL has a different emission limit or requirement for the same pollutant under another regulation in title 40 of this chapter, the owner or operator of the affected facility must comply with the most stringent emission limit or requirement and is exempt from the less stringent requirement.
>
> [Rule 62-204.800, F.A.C. and 40 CFR 63.1356]

The Miami cement plant current Title V permit limits mercury annual emissions to 182 pounds per year, measured by mass balance and assuming 100 percent of the input is emitted. Thus, the Title V permit limits the Miami cement plant to 7 percent of the NESHAP subpart E (i.e, current limit on mercury is 21 times more stringent than NESHAP subpart E). Given the limitations of the current Title V permit and the fact that this permit application will not violate the constraints of the current Title V permit, the sampling requirements of NESHAP Subpart E are guaranteed to be met at least once per year (satisfying the requirements of the rule).

Furthermore, NESHAP subpart E was developed for the purpose of regulating disposal incinerators of untreated wastewater treatment plant sludge. As mentioned above; CEMEX intends to only receive treated and processed sludge material. The material will be a minor component of an engineered fuel composition and must meet internal composition and properties criteria to emissions, product quality, and kiln structure integrity impacts (e.g., low chlorine content). CEMEX does view that these materials derived from sludges which do meet the criteria to be used as alternative fuels should not be wasted and landfilled but should be harnessed in a controlled and regulated environment. The materials must be treated and processed such that the material is not a health hazard and meets all regulatory limitations. The engineered fuel must be a sorted composite of materials that mimic fossil fuels with valuable heat content, low levels of unwanted constituents (e.g., low chlorine and sulfur, volatile metals, alkalies).

At the time of shipment to the facility, these materials will be processed and treated and a minor component of a specified engineered fuel. Any waste material that has not been treated as such will not be accepted. Engineered fuel is a commodity and it will be treated as such. These materials will be handled and stored as fuel materials to meet all permitting requirements.

The following table provides a listing of the constituents in biosolids which can be compared to fossil fuels in Table 2.

Table 3. Characteristics of Biosolids

	LHV *mmBtu/ton*	**Density** *kg/m³*	**Moisture** *%*	**Ash** *%*	**Sulfur** *%*	**Fluoride** *%*	**Chlorine** *%*	**Volatile** *%*
[16]	12.9	--	70-80	32.4	0	--	--	67.6
[17]	+--	860.6	--	--	--	--	--	--
[18]	--	--	--	--	--	--	--	--
[19]	--	--	--	--	--	--	--	--
[20]	9.8	--	--	48	1.22	0.026	0.078	--
[21]	--	--	--	--	1.1	<0.125	<0.25	--

[16] Houdkova, L., Boran, J., Ucekaj, V., Elsaber, T., Stehlik, P. "Thermal Processing of Sewage Sludge." Applied Thermal Engineering 28 (2008) 2083-2088

[17] LinGroBiosolids Cake – A Product of The Lincoln Wastewater System. http://lancaster.unl.edu/enviro/BiosolidNutrientMetals_LNK.pdf

[18] Werther, J., Ogada, T. "Sewage Sludge Combustion." Process in Energy and Combustion Science 25 (1999) 55-116

[19] Amand, L.E., Leckner, B. "Metal emissions from co-combustion of sewage sludge and coal/wood in fluidized bed." Fuel 83 (2004) 1803-1821

[20] K. R. G. Hein: Combined combustion of biomass/sewage sludge and coals; Clean Coal Technology Programme 1992-1994, Stuttgart, IVD, ISBN 3-928123-16-5 (1994).

[21] Letter from Margaret Guerriero, EPA Director of Lands and Chemical Div. EPA, "Biosolids: Response to Delhi Carter Township, Dec 15, 2011"

	Hg *ppm*	**As** *ppm*	**Cd** *ppm*	**Cr** *ppm*	**Pb** *ppm*	**Se** *ppm*
16	2.45	--	2	37.5	54	--
17	0.01	18.25	4.06	33.82	38.83	--
18	2.7	--	3.8	91	159	--
19	1.2	5.5	1.4	39	42	--
20	--	--	--	--	--	--
21	1.3	8.8	2.8	74	11	5.9

Response to comments from Air Quality Management Division (AQMD) of the Permitting, Environment, and Regulatory Affairs (PERA) in Miami-Dade County.

1. The applicant proposes to use engineered fuels. The definition of engineered fuels as provided in the application is very broad. Provide the density, heating value, moisture, ash, sulfur, volatile, chlorine, fluoride, mercury, arsenic, cadmium, chromium, copper, lead and thallium content.

As discussed in the application, engineered fuel is designed to match the properties of fossil fuels for which the kiln pyroprocessing system was designed to burn; coal and pet coke. Fuels impact not only air emissions, but the kiln structure and the manufactured product. Engineered fuels are desired because the fuel can be designed from several component materials to create a fuel with known properties. The operation of the kiln system demands consistent fuel properties including the chemical composition of the fuels. One of the demands for consistent properties is so that the kiln operators can control the temperatures in the process. Another demand is control of air emissions which discussed in depth in the application. Such companies that produce such engineered fuel include PEER and Waste Management. Manufacturers of these materials seek to produce similar thermal values of coal and other solid fuels while producing lower emissions. Additionally, not only has the use of engineered fuels been shown to reduce emissions, it conserves non-renewable resources (such as coal) lowering the amount of material that then is landfilled and the associated greenhouse gases that would inevitably be released through decomposition.

CEMEX has described engineered fuel to be derived from various non-hazardous materials with specific examples of such materials. Similar to the engineered fuel permit issued to Titan America in Miami, CEMEX provides the listing below of example materials like that of the Titan America permit.

Shown below in Table 7 are typical values of engineered fuels and Table 8 presents the possible values for the same characteristics for coal.

Please note that we have included copper and thallium content. Copper and thallium are not regulated air pollutants.

Table 1Characteristics of Engineered Fuel

	LHV *mmBtu/ton*	**Density** *kg/m³*	**Moisture** *%*	**Ash** *%*	**Sulfur** *%*	**Fluoride** *%*	**Chlorine** *%*	**Volatile** *%*
22	11.2-18.9	--	11-34	7-18	0.1-0.2	0.01	0.3-0.7	--
23	16.1	75-600	7-28	12.0	0.1-0.5	--	0.3-1.2	68
24	15.6	80	18	12.7	0.175	0.09	0.43	65

[22]European Commission- Directorate General Environment."Refused Derived Fuel, Current Practives and Perspectives- Final Report."WRc Ref: CO5087-4. (2003) Table 3.14

[23]European Commission- Directorate General Environment."Refused Derived Fuel, Current Practives and Perspectives- Final Report."WRc Ref: CO5087-4. (2003) Table B.48

[24]Technical Evaluation & Preliminary Determination - Tarmac American, LLC Project No. 0250020-031-AC.Submitted July 15, 2011.

	Hg *Ppm*	As *ppm*	Cd *ppm*	Cr *ppm*	Cu *ppm*	Pb *ppm*	Tl *ppm*
22	0.1-0.4	1.0-8.8	0.6-2.2	20-140	48-98	25-121	0.4-0.5
23	--	--	--	--	--	--	--
24	5	--	--	--	--	--	--

Table 2 Characteristics of Coal

	LHV *mmBtu/ton*	Density *kg/m³*	Moisture *%*	Ash *%*	Sulfur *%*	Fluoride *%*	Chlorine *%*	Volatile *%*
25	5.62	--	57.2	33	17.3	4,900	8,800	55.7

	Hg *ppm*	As *ppm*	Cd *ppm*	Cr *ppm*	Cu *ppm*	Pb *ppm*	Tl *ppm*
25	63	2,200	160	200	280	1,900	420

2. Provide the source of the animal meal and describe its classification. Provide the density, heating value, moisture, ash, sulfur, volatile, chlorine, fluoride, mercury, arsenic, cadmium, chromium, copper, lead, and thallium content.

Please response to question 2 from FDEP.

3. The PERA has concerns regarding the use of copper-chromium-arsenic (CCA) treated wood. Due to these concerns, the PERA would request that CEMEX work with their vendors & suppliers to develop a protocol to eliminate all treated wood.

The CEMEX Miami Cement Plant has requested to limit CCA-treated lumber to 1,000 lb/hr on a 7-operational day average. This equates to less than 5 percent of heat input to the kiln. In addition, then fraction of input CCA to the potential air emissions is minimal as discussed in the permit and copied below.

> The potential for CCA metal emissions can be best represented with the following hypothetical example. The typical concentrations of arsenic and chromium can range from 0.2 to 2.5 pounds per cubic foot in various blends of CCA-treated wood. Using a very conservative scenario, the concentration of arsenic, copper and chromium in the CCA wood is assumed to be 2.5 pounds per cubic foot. The typical density of treated wood is 35 lbs/cubic foot[26]. Using the assumed metals concentrations and an input rate of 1,000 lb/hour of CCA wood, the input of arsenic, copper and chromium into the kiln would be 71.4 pounds per hour. The emitted portion of the metals from the fuel input's emission factor of 0.0005% is derived from data presented by the German Cement Industry. Using the emission factor and amount of metals input into the kiln, the worst case potential hourly emissions would be 0.0004 pounds per hour."

[25] USGS Coal Database- http://energy.er.usgs.gov/coalqual.htm
[26] (http://www.floridacenter.org/publications/Ma0650892.pdf)

Additional information of CCA-treated wood as fuel in cement kiln are found for air emission impacts and clinker quality in references[27,28,29,30]. This request is similar with the request of the issued air permit for the Titan America cement plant in Dade county, Florida.

Treated woods are discussed in the application and have been shown to be viable alternative fuels in cement kilns with similar or reduced air pollutant emissions in comparison to fossil fuels.

4. EQCB Board Order Condition No. 1 allows the use of "clean non-chlorinated plastic byproducts as specifically approved by DERM". Please specify how CEMEX will eliminate chlorinated plastics from the engineered fuel.

CEMEX does not intend to utilize alternative fuels that are comprised of chlorinated plastics and all suppliers will be advised contractually concerning this restriction.

5. The applicant proposes to use Class A and B biosolids. Research shows that Class A is sanitized while Class B is not. The PERA has concerns regarding the use of Class B biosolids. Provide a lab analysis of the biosolids material to include density, heating value, moisture, ash, sulfur, volatile, chlorine, fluoride, mercury, arsenic, cadmium, chromium, copper, lead, and thallium content.

According to the EPA, Class A biosolids contain minute levels of pathogens while Class B biosolidshave less stringent standards for treatment and contain small but compliant amounts of bacteria. These classifications are generally applied during the evaluation of a site's suitability to determine if land application can be performed. During these evaluations, examinations into the water supply, soil characteristics, slopes, vegetation, crop needs and the distances to surface and groundwater are applied. In the case of the Miami Cement Plant, these materials will not be used for land application.

To achieve Class A certification, biosolids must undergo heating, composting, digestion or increased pH that reduces pathogens to below detectable limits. These technologies are known as PFRP – Processes that can Further Reduce Pathogens – and once such process technology included in this list, as defined by the EPA, is titled "Pasteurization." Pasteurization produces a Class A material when incoming biosolids are heated to at least 158 °F for 30 minutes. It is described that under this heat, pathogens in the organic matter will be killed. At the Miami Cement Plant, these materials will enter into the process at temperatures ranging from 1800 to3,500 °F, which should be more than sufficient temperatures to destroy remaining organics associated with Class B biosolids.

Please find below the material analysis requested. Note that we have included copper and thallium content. Copper and thallium are not regulated air regulated pollutants.

Table 3Characteristics of Biosolids

LHV	Density	Moisture	Ash	Sulfur	Fluoride	Chlorine	Volatile

[27]Bernardin, G. 1995. St. Lawrence Cement. Proceedings of the CITW Life Cycle Assessment Workshop. June 20-21. Canadian Institute of Treated Wood, Ottawa, Ont.
[28]Development of design criteria for integrated treatment technologies for thermal processing of end-of-life CCAtreated timber products – Vol 2.PN04.2012.Australian Govt. Forest and Wood Products Research andDevelopment Corp.
[29] Guidelines Disposal of Wastes in Cement Plants, October 2005. Swiss Agency for the Environment, Forest, andLandscapes SAEFL.
[30]Millette, L. and A. Auger. 1997. Integrated management of used treated wood. Paper presented at the Workshop on Utility Poles - Environmental Issues. Madison Wisconsin, Oct. 13 and 14, 1997.

	mmBtu/ton	*kg/m³*	*%*	*%*	*%*	*%*	*%*	*%*
31	12.9	--	70-80	32.4	0	--	--	67.6
32	--	860.6	--	--	--	--	--	--
33	--	--	--	--	--	--	--	--
34	--	--	--	--	--	--	--	--
35	9.8	--	--	48	1.22	0.026	0.078	--
36	--	--	--	--	1.11	< 0.125	< 0.25	--

	Hg *ppm*	**As** *ppm*	**Cd** *ppm*	**Cr** *ppm*	**Cu** *ppm*	**Pb** *ppm*	**Tl** *ppm*
31	2.45	--	2	37.5	--	54	<10
32	0.01	18.25	4.06	33.82	607.9	38.83	--
33	2.7	--	3.8	91	330	159	--
34	1.2	5.5	1.4	39	430	42	0.16
35	--	--	--	--	--	--	--
36	1.3	8.8	2.8	74	--	11	--

Table 4Characteristics of Coal

	LHV *mmBtu/ton*	**Density** *kg/m³*	**Moisture** *%*	**Ash** *%*	**Sulfur** *%*	**Fluoride** *%*	**Chlorine** *%*	**Volatile** *%*
37	5.62	--	57.2	33	17.3	4,900	8,800	55.7

	Hg *ppm*	**As** *ppm*	**Cd** *ppm*	**Cr** *ppm*	**Cu** *ppm*	**Pb** *ppm*	**Tl** *ppm*
37	63	2,200	160	200	280	1,900	420

6. Review of the emissions calculations submitted in the application indicates that the PSD significant increases in NOx and PM_{10} emissions are 39.38 TPY, and 14.76 TPY, respectively. The PERA has concerns with these increases because they are close to the PSD significant emissions rates (SER).

[31]Houdkova, L., Boran, J., Ucekaj, V., Elsaber, T., Stehlik, P. "Thermal Processing of Sewage Sludge." Applied Thermal Engineering 28 (2008) 2083-2088
[32]LinGroBiosolids Cake – A Product of The Lincoln Wastewater System. http://lancaster.unl.edu/enviro/BiosolidNutrientMetals_LNK.pdf
[33]Werther, J., Ogada, T. "Sewage Sludge Combustion." Process in Energy and Combustion Science 25 (1999) 55-116
[34]Amand, L.E., Leckner, B. "Metal emissions from co-combustion of sewage sludge and coal/wood in fluidized bed." Fuel 83 (2004) 1803-1821
[35] K. R. G. Hein: Combined combustion of biomass/sewage sludge and coals; Clean Coal Technology Programme 1992-1994, Stuttgart, IVD, ISBN 3-928123-16-5 (1994).
[36]Guerriero, M. Letter to Sandra Diorka.15 Dec. 2011. United States Environmental Protection Agency. Chicago, IL. http://www.epa.gov/epawaste/nonhaz/define/pdfs/delhi-charter.pdf
[37]USGS Coal Database- http://energy.er.usgs.gov/coalqual.htm

NOx and PM_{10} emission changes are calculated in the application and determined by Federal and State rules to not be significant. The substitution rates selected for each alternative fuel were chosen to ensure that, using the documented and published emission factors chosen, PSD significant emission rates would not be exceeded. As the application describes, studies have clearly shown that alternative fuels should reduce emissions, including NO_X and PM. Additionally, it should be pointed out that this application does not request an increase in either production or operation limits. During this construction permit, the CEMEX Miami Cement Plant shall operate under and at all times within the constraints specified by its existing operation permit (0250014-044-AV).

7. The applicant has indicated that there will be a PSD significant increase in PM emissions in the amount of 17.93 tons/year. PM is a surrogate for HAP. The increase in heavy metal deposit may impact the Wellfield Protection Area. The PERA has concerns regarding a potential increase in the concentration of metals within PM discharges when burning alternative fuels and the cumulative effect of deposition within the Wellfield Protection Area.

PM emission changes are calculated in the application and determined by Federal and State rules to not be significant. The CEMEX Miami Cement kiln system is currently permitted to emit 163 TPY of particulate matter (PM). The heavy metal content of current emissions is contributed by the raw material and the fuel. Of these two contributions, PM emissions are predominately from rock (located next to the cement plant) quarried from the local area that is calcined in the kiln. The fraction of PM emissions from the raw material is typically more than 90 percent of PM emissions. The fuel is typically 10 percent of less of PM emissions (see page 45 of application appendix). The fuel currently burned is primarily coal. Coal, as discussed above, can have far greater metals than metals in alternative fuels. The estimated increase of potential PM emissions is 11 percent. Further, EPA regulates metal HAPs via PM emissions and has stated that metal HAPs should be less than 1 percent of PM (1 percent of 17.93 tons per year is 359 pounds per year). Note the facility fugitive emissions are stated in the Title V permit to be 31.9 ton per year. Given the total emissions inventory for stationary and mobile sources in Dade county are many orders of magnitude greater than the emissions from CEMEX Miami cement plant and that the fractional increase of potential PM emissions is 11 percent, the PM emissions from the CEMEX Miami cement plant has not and should not be of concern for such an impact on the Wellfield.

8. The PERA has concerns that the CEMEX Miami Cement Plant or portion of it lies on the Northwest Wellfield Protection Area. As such, the PERA has concerns regarding the collection, storage, and handling of wastes such as dry biosolids, infectious hospital wastes, and engineered fuels.

Please note CEMEX is not requesting to collect store or handle infectious hospital waste. CEMEX is in the process to address such concerns with PERA solid waste and other agencies as required. We appreciate your reminder of this requirement. CEMEX is requesting the option to use dried biosolids and engineered fuel. These materials will not be hazardous and will be fuels, not waste. As noted in the application, all materials will be stored under cover and measures (e.g., barrier walls) will be used as needed, to prevent fugitive emissions, to keep dry and to prevent entry into storm water. These materials are commodities and will be treated as any fuel material at the plant. Additionally, dust suppression in storage areas will be used as needed and any stored alternative fuel material causing nuisance odors will be removed from the site. All of these methods will be implemented and used to ensure that materials will not inadvertently leave the site or cause secondary pollution.

9. CEMEX is advised to contact Mr. Wilbur Mayorga of the Pollution Control Division of PERA at 305-372-6700, and Mr. Hardeep Anand of the Pollution Regulation & Enforcement Division of PERA at 305-372-6600 regarding authorization to use these wastes at the CEMEX facility.

CEMEX is aware of the need for meeting other regulatory requirements and thanks you for your advisement.

Attachment 1

Off-specification Used Oil information

Below is a sample analysis of an off spec load of fuel performed by the Environmental Laboratory at the CEMEX cement plant in Miami, Florida.

The total amount of off-spec oil processed during the past 5 years (2007 - 2011) is approximately 150,000 gallons.

85,000 gallons in 2011

65,000 gallons in 2009

Materials Analysis Report

REPORT DATE	1/15/2012
SAMPLE DATE	12/19/2011
SAMPLE SOURCE	CBI
REFERENCE	
C.E.S. ID NUMBER	32701
SAMPLE TYPE	USED OIL

OFF SPEC FUEL

PARAMETER	RESULT	UNITS	METHOD	D. LIMITS	ANALYSIS DATE	ANAL. INITIAL
Flashpoint	75	Deg. F	1010	75	1/9/2012	AP
Arsenic	BDL	mg/kg	7060	1	1/9/2012	AP
Barium	BDL	mg/kg	7081	0.1	1/9/2012	AP
Cadmium	BDL	mg/kg	7131	0.1	1/9/2012	AP
Chromium	BDL	mg/kg	7191	0.1	1/9/2012	AP
Mercury	BDL	mg/kg	7471	0.01	1/9/2012	AP
Lead	BDL	mg/kg	7421	0.1	1/9/2012	AP
Selenium	BDL	mg/kg	7740	0.5	1/9/2012	AP
Silver	BDL	mg/kg	7761	0.1	1/9/2012	AP
Total Halides	BDL	mg/kg			1/9/2012	AP
% Total Water	<1				1/9/2012	AP
Btu's/Lbs	19107	Btu's/Lbs			1/9/2012	AP
% Water (free)	<0.1	%				
Chlor D Tect	Neg.	Pos/Neg				
Density	6.926	lbs/gal			1/9/2012	AP
%Solids	<1	%				
Viscosity #2	15	sec			1/9/2012	AP
61's	Neg.	mg/kg	(see attached)			
API @ 60*F	39				1/9/2012	AP

Juan A. Gonzalez
QA/QC Manager