

ILLINOIS POLLUTION CONTROL BOARD
April 20, 2006

IN THE MATTER OF:)
)
PETITION OF LAFARGE MIDWEST, INC.) AS 06-1
FOR BOILER DETERMINATION) (Adjusted Standard - Land)
PURSUANT TO 35 Ill. Adm. Code 720.132)
AND 720.133)

OPINION AND ORDER OF THE BOARD (by N.J. Melas):

Lafarge Midwest, Inc. (Lafarge) filed a petition seeking the Board’s determination that a slag dryer operated at its South Chicago Slag Grinding Plant (Plant) located at 2150 East 130th Street in Chicago may be considered a “boiler” as defined in 35 Ill. Adm. Code 720.110 (definitions). A boiler determination would allow the Lafarge dryer to be used for the combustion of off-specification used oil for energy recovery in compliance with 35 Ill. Adm. Code 739.161. The Illinois Environmental Protection Agency (Agency) recommended that the Board grant Lafarge’s amended petition, provided that Lafarge addressed specified issues with regard to the need for additional air pollution control devices or the modification of existing equipment and with regard to environmental impacts.

This is the Board’s first boiler determination. In today’s opinion, the Board finds on the basis of the record before it that Lafarge has provided sufficient justification under 35 Ill. Adm. Code 720.132 for a boiler designation for the slag dryer at the Plant.

This opinion will first describe the general procedure through which a petitioner may seek a boiler designation before providing the procedural and factual backgrounds of this case. The Board then analyzes the criteria by which the Board is to make boiler determinations on a case-by-case basis. Finally, the Board reaches its conclusion and issues its order.

BOILER DESIGNATION PROCEDURE AND JUSTIFICATION

In its Resource Conservation and Recovery Act (RCRA) waste disposal regulations, the Board has adopted standards for the management of used oil. 35 Ill. Adm. Code 739.100 *et seq.*; RCRA Update, USEPA Regulations (July 1, 1992 through December 31, 1992), R93-4 (Sept. 23, 1993) (adopting new Part 739); RCRA Update, USEPA Regulations (April 24, 1984 through June 30, 1985), R85-22 (Jan. 9, 1986) (adopting provisions regarding boiler determinations). Specifically, those used oil regulations allow burning of off-specification used oil for energy recovery in a limited number of devices including “[i]ndustrial boilers located on the site of a facility engaged in a manufacturing process where substances are transformed into new products, including the component parts of products, by mechanical or chemical processes.” 35 Ill. Adm. Code 739.161(a)(2)(A).

The Board has also promulgated regulations providing procedures and criteria for making a determination that certain devices are “boilers” that may be used for burning off-specification

used oil, even though those devices do not otherwise meet the definition of “boiler.” *See* 35 Ill. Adm. Code 720.132 (Boiler Determinations); 35 Ill. Adm. Code 720.133 (Procedures for Determinations); 35 Ill. Adm. Code 720.110 (defining “boiler” as enclosed device using controlled flame combustion and having specified characteristics).

The Board’s boiler determination regulations provide that a petitioner must seek a boiler determination through procedures for an adjusted standard: “[t]he Board will use the procedures of Subpart D of 35 Ill. Adm. Code 104 for determining . . . whether a particular enclosed flame combustion device is a boiler.” 35 Ill. Adm. Code 720.133; *see* 35 Ill. Adm. Code 104.400 – 104.428 (Adjusted Standards). Subpart D sets forth procedures for a petition for an adjusted standard. Among other requirements, Subpart D requires specific information that must be contained in the petition for a boiler determination. *See* 35 Ill. Adm. Code 104.406.

“The burden of proof in an adjusted standard proceeding is on the petitioner.” 35 Ill. Adm. Code 104.426. “If the regulation of general applicability specifies a level of justification for an adjusted standard, the Board may adopt the proposed adjusted standard, if the petitioner proves the level of justification specified by the regulation of general applicability.” 35 Ill. Adm. Code 104.426 (b); *see* 415 ILCS 5/28.1(b) (2004). As discussed above, the Board has specified the level of justification for making a boiler determination in Section 720.132. 35 Ill. Adm. Code 720.132. The Board determines on a case-by-case basis whether a device is a boiler, even though it does not otherwise meet the definition of one, by considering six criteria. 35 Ill. Adm. Code 720.132(a-f). Those criteria are: the extent to which the unit provides for recovering and exporting thermal energy; the extent to which the combustion chamber and energy recovery equipment are of integral design; the efficiency of energy recovery; the extent to which exported energy is used; the extent to which the device is in common and customary use as a “boiler;” and other relevant factors. *Id.* The Board addresses each of these six factors individually below under “Criteria for Determination.”

PROCEDURAL BACKGROUND

On September 12, 2005, Lafarge petitioned the Board (Pet.) for an adjusted standard from 35 Ill. Adm. Code 739.161, the Board’s waste disposal regulations restricting the burning of off-specification used oil for energy recovery. Lafarge waived its right to a hearing on the petition. Pet. at 31, *see* 35 Ill. Adm. Code 104.406(j).

The Act and the Board’s regulations require publication of notice of a petition for an adjusted standard in a newspaper of general circulation in the area likely to be affected by the petitioner’s activity. 415 ILCS 5/28.1(d)(1) (2004); 35 Ill. Adm. Code 104.408(a). The petitioner must publish notice within 14 days of filing a petition for an adjusted standard with the Board. 415 ILCS 5/28.1(d)(1) (2004); 35 Ill. Adm. Code 104.408(a). As required, Lafarge on September 30, 2005 timely filed with the Board proof of publication indicating the *Daily Southtown* published notice of the petition on September 15, 2005. *See* 35 Ill. Adm. Code 104.410 (requiring filing of certificate within 30 days after filing petition). The Board received no request to hold a hearing in this matter.

In an October 20, 2005 order, the Board found that Lafarge's petition did not fully satisfy the information requirements contained in the Board's rules. *In re* Petition of Lafarge Midwest, Inc. for and Adjusted Standard from 35 Ill. Adm. Code 739.161, AS 06-1, slip op. at 2-4 (Oct. 20, 2005); *see* 35 Ill. Adm. Code 104.406. Accordingly, the Board directed Lafarge to address eight points of information in an amended petition to be filed within 45 days. *In re* Petition of Larfarge Midwest, Inc. for and Adjusted Standard from 35 Ill. Adm. Code 739.161, AS 06-1, slip op. at 4 (Oct. 20, 2005).

On October 24, 2005, the Agency filed its recommendation (Rec.). The Agency stated it did not agree when Lafarge in January 2004 sought a determination that its slag dryer could be considered a boiler. Rec. at 1. The Agency reported that Lafarge since that time has satisfactorily addressed its comments and questions and has incorporated that information into the petition for an adjusted standard. Rec. at 1-2. Accordingly, "the Illinois EPA recommends that the adjusted standard be granted." Rec. at 3.

On December 5, 2005, Lafarge filed its amended petition for boiler designation (Am. Pet.). Lafarge again waived its right to a hearing on the amended petition. Am. Pet. at 43. On January 17, 2006, the Agency filed its amended recommendation (Am. Rec). 35 Ill. Adm. Code 104.418(b). The Agency recommended granting the petition, provided that Lafarge addressed issues relating to the need for additional air pollution control devices or the modification of existing equipment and to environmental impacts. Am. Rec. at 1, 3-4. On January 30, 2006, Lafarge filed its response to the Agency's amended recommendation (Resp.).

FACTUAL BACKGROUND AND PETITION CONTENTS

Lafarge owns and operates the Plant (Am. Pet. at 2), which is located at "2150 East 130th Street, Chicago, Cook County, adjacent to the Calumet River and the southernmost portion of Lake Calumet." Am. Pet. at 3. In 2001 and 2002, Lafarge developed the Plant on existing Lafarge property that had been used since approximately 1987 as a terminal for storage and distribution of cement. *Id.* Lafarge characterizes the vicinity of the Plant as a "heavily industrialized area of active and closed steel mills, oil refineries, railroad yards, coke ovens, heavy manufacturing and waste disposal facilities." *Id.*

The Plant principally produces a slag cement product marketed under the trade name NewCem. Am. Pet. at 4. For that production, Lafarge first obtains blast furnace slag from Ispat-Inland, Inc., which generates the slag at its integrated steel facility in East Chicago, Indiana. *Id.* A blast furnace generates molten slag in the process of extracting iron from iron ore. *Id.* Molten iron and molten slag are removed separately from the furnace, and the molten slag forms granules or pellets when quenched with water. *Id.*

"NewCem is produced by drying and grinding a pelletized or granulated iron blast furnace slag to cement fineness." Am. Pet. at 4. Lafarge reports that it receives slag with a moisture content of 10-12%, "which guarantees a dust-free transfer." Am. Pet. at 9. The slag first moves through Lafarge's grinding operation for magnetic removal of metallic compounds before it enters the Plant's drying system. Am. Pet. at 9-10. "The slag dryer functions as a direct-fired process heater to reduce the moisture content of the blast furnace slag so that the slag

can be ground into a fine powder and processed into slag cement.” Am. Pet. at 10. The Plant “has the capacity to grind over 500,000 metric tons of granulated slag.” *Id.* Lafarge reports that it employs “fifteen salaried plant employees and one salaried distribution employee.” *Id.*

Lafarge notes that the Board has adopted standards for management of used oil. *See* 35 Ill. Adm. Code 739.100 *et seq.* Specifically, those regulations allow burning of off-specification used oil for energy recovery in “[i]ndustrial boilers located on the site of a facility engaged in a manufacturing process where substances are transformed into new products, including the component parts of products, by mechanical or chemical processes.” Am. Pet. at 6, citing 35 Ill. Adm. Code 739.161(a)(2)(A).

Lafarge further notes that the Board has also promulgated regulations providing procedures and criteria for determining that certain devices are “boilers” that may be used for burning off-specification used oil, even though those devices do not otherwise meet the definition of “boiler.” Am. Pet. at 6, *see* 35 Ill. Adm. Code 720.110 (definition). “Section 720.132 establishes the criteria to be considered by the Board in making a case-by-case boiler determination and Section 720.133 mandates use of the Adjusted Standard procedures of Subpart D of 35 Ill. Adm. Code 104.” Am. Pet. at 6-7.

Lafarge notes that, in January 2004, it sought Agency confirmation that its slag dryer could be considered a “boiler” authorized to burn off-specification used oil. Am. Pet. at 13, citing 35 Ill. Adm. Code 720.110. The Agency responded “that the slag dryer ‘ . . . would not meet the definition of industrial boiler in 35 Ill. Adm. Code 720.110.’” Am. Pet. at 13 (citing letter from Agency land permit manager). Because of the Agency’s interpretation, Lafarge states that it “would not risk an enforcement action by proceeding to use off-specification used oil as a supplemental fuel in the slag dryer.” *Id.* Suggesting that it now uses only specification fuel, Lafarge states that “[t]here are no compliance alternatives, no capital improvements and no operational changes that would allow Petitioner to ‘comply with the regulation of general applicability.’” Am. Pet. at 14.

Lafarge notes that, to comply with federal and state emissions regulations, it submits to the Agency an Annual Emissions Report (AER) on activities at the Plant. Am. Pet. at 11-12. In its most recent AER filed March 15, 2005, Lafarge reported the following emissions for the entire facility: carbon monoxide (CO), 9.96 tons/year; nitrogen oxides (NO_x), 7.68 tons/year; particulate matter (PM), 11.54 tons/year; particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM₁₀), 6.01 tons/year; sulfur dioxide (SO₂), 0.59 tons/year; and volatile organic material (VOM), 9.07 tons/ year. Am. Pet at 12; *see* Am. Pet, Exh. E (2004 AER). Lafarge also reported that following emissions attributable specifically to its slag drying system: CO, 9.96 tons/year; NO_x, 7.68 tons/year; PM, 10.08 tons/year; PM₁₀, 5.02 tons/year; SO₂, 0.59 tons/year; and VOM, 9.07 tons/ year. Am. Pet at 12; *see* Am. Pet, Exh. E (2004 AER). In response to the Board’s October 20, 2005 request for more information, Lafarge states that “[o]ther than air emissions reported to the Illinois Environmental Protection Agency and summarized above, operation of the Grinding Plant results in no other discharges to the environment.” Am. Pet. at 13. The Agency “does not take issue with Petitioner’s statements on this subject.” Am. Rec. at 2.

In its amended petition, Lafarge notes that the Board requested cost information comparing specification fuel under the regulation of general applicability and off-specification fuel under the requested relief. Am. Pet. at 14. Lafarge “is proposing to supplement the use of natural gas with off-specification used oil” in its slag dryer. *Id.* Specifically, Lafarge “is proposing to use approximately 500,000 to 600,000 gallons of used oil fuel per year.” *Id.* Assuming use of 500,000 gallons per year and average costs of \$0.90 per gallon for specification used oil and \$0.67 per gallon for off-specification used oil, Lafarge expects to save \$115,000 annually by replacing specification used oil with off-specification used oil as fuel for its slag dryer. *Id.* Lafarge states that this additional cost savings “is required to make the project cost effective.” *Id.* Lafarge further states that the savings associated with use of specification used oil “do not justify the investment required to burn used oil.” *Id.*

Further, Lafarge expects the cost advantage of off-specification used oil to increase. Lafarge believes that increasing demand for natural gas will continue to outstrip new production, resulting in higher natural gas prices. *See* Am. Pet. at 15. However, Lafarge also foresees that market prices for specification and off-specification used oil will increase. Am. Pet. at 15-16. While high natural gas prices might once have led some industrial facilities to convert to the use of refined oil fuels, Lafarge suggests that oil prices of \$60-\$70 per barrel have all but eliminated the incentive for that conversion. Am. Pet. at 15. Generally high energy prices, according to Lafarge, have increased the demand for used oil, and that increased demand will tend to increase its market price. Am. Pet. at 16.

Lafarge notes that section 720.132 of the Board’s regulations provides criteria for making boiler determinations. Am. Pet. at 26, citing 35 Ill. Adm. Code 720.132. Lafarge further notes that these criteria closely track the regulatory definition of “boiler.” Am. Pet. at 26, citing 35 Ill. Adm. Code 720.110. Lafarge suggests that the Board’s analysis of the criteria in section 720.132 is an analysis of whether its slag dryer has the physical characteristics of a boiler. *See* Am. Pet. at 26; 35 Ill. Adm. Code 720.110 (definition of “boiler”). The Agency “does not take issue with Petitioner’s statements on this subject.” Am. Rec. at 4. The Board addresses each of those criteria below under “Criteria for Determination.”

Lafarge notes that sections 7.2 and 22.4(a) of the Act (415 ILCS 5/7.2, 22.4(a) (2004)) require the Board to adopt regulations that are “identical-in-substance” to hazardous waste regulations adopted by USEPA under RCRA. Am. Pet. at 42, citing 42 U.S.C. 6921 *et seq.* Lafarge further notes that federal and state regulations provide virtually identical mechanisms for determining whether a device is a “boiler” even if it does not otherwise meet the regulatory definition of that term. Am. Pet. at 42-43, citing 40 C.F.R. 260.32; 35 Ill. Adm. Code 720.132. Consequently, “[a]pproval by the Board of Lafarge’s Petition would be consistent with federal law and the implementing RCRA regulations.” Am. Pet. at 43. The Agency “does not take issue with Petitioner’s statements on this subject.” Am. Rec. at 2.

Finally, although it states that “[t]he regulation of general applicability does not specify any additional information requirements,” Lafarge requests that the Board consider the action of other regulatory agencies that have made boiler determinations. Am. Pet. at 43. Lafarge reports that the dryer at its Alpena, Michigan plant is “virtually identical” to the dryer that is the subject of this petition. Am. Pet. at 44. Lafarge emphasizes that the Michigan Department of

Environmental Quality determined that the Alpena dryer “meets the physical characteristics of a ‘boiler’” and approved Lafarge’s request to use off-specification used oil in it. *Id.*; Am. Pet., Exh. D. The Agency “does not take issue with Petitioner’s statements on this subject.” Am. Rec. at 4.

CRITERIA FOR DETERMINATION

Lafarge argues that it has demonstrated its slag dryer “satisfies each of the criteria specified at 35 Ill. Adm. Code 720.132 to be considered a boiler.” Am. Pet. at 27, citing 35 Ill. Adm. Code 720.132; *see* 35. Ill. Adm. Code 104.406(h) (justification). The Agency “does not take issue with Petitioner’s statements on this subject.” Am. Rec. at 4. The Board addresses each of the six criteria separately below.

Recovering and Exporting Thermal Energy (35 Ill. Adm. Code 720.132(a))

Lafarge states that the slag dryer recovers and exports the thermal energy it generates as heated gas. Lafarge further states that its process unit is a thermal dryer, which functions as a direct-fired process heater. Am. Pet. at 27. Thermal energy released by combustion of fuel is transferred to the wet blast furnace slag. *Id.* This process reduces the moisture content of the slag before it is ground to the desired particle size. Am. Pet. at 27-28. “The heat is then exported in the form of heated slag gases and water vapor” (Am. Pet. at 27), which discharge from the dryer through a cyclonic separator. The separator removes dried slag from the exhaust gas, which is cleaned by a fabric filter baghouse system before discharge into the atmosphere. *Id.*

Lafarge describes its dryer as “fully enclosed with an outer shell of steel.” Am. Pet. at 28. It characterizes the burning chamber as “lined with a high temperature resistant refractory material” and states that “the transport shaft is lined with ceramic tile.” *Id.* Consequently, Lafarge argues that “[t]he design is conducive to recovering as much energy as possible from the fuel.” *Id.*

On the basis of this record, the Board finds that Lafarge’s slag dryer does have provisions in its design and operation for recovering and exporting thermal energy released by the combustion of off-specification used oil fuel. *See* 35 Ill. Adm. Code 720.132(a). In this regard, the slag dryer shares physical characteristics with devices that meet the regulatory definition of “boiler.” *See* 35 Ill. Adm. Code 720.110. Accordingly, the Board’s consideration of this factor favors designating the slag dryer as a boiler.

Integral Design (35 Ill. Adm. Code 720.132(b))

While Lafarge states that the slag dryer is of integral design, Lafarge also argues that a Board finding to the contrary does not preclude a boiler determination under a regulatory exception. Lafarge states that its “dryer is an inline portion of the slag cement manufacturing process, in which the slag is dried, ground and size-classified to produce a salable cement product.” Am. Pet. at 28; *see* Am. Pet., Exh. C (graphic depiction of dryer). Lafarge further

states that “[t]he combustion chamber and vertical shaft were assembled to be one piece of equipment” and that “[t]he dryer is fully enclosed and of integral design.” *Id.*

Lafarge notes that, under the definition of “boiler” in the Board’s regulations, “process heaters (units that transfer energy directly to a process stream)” “are not precluded from being boilers solely because they are not of integral design.” 35 Ill. Adm. Code 720.110. Lafarge argues that, “[b]ecause the slag dryer is a direct-fired process heater where the thermal energy of the combusted fuel is transformed to the wet slag being processed, the element of ‘integral design’ is not determinative in this proceeding.” Am. Pet. at 28. Because Lafarge claims that its slag dryer is fully enclosed and of integral design, Lafarge suggests that it satisfies this criterion regardless of whether the “process heater” exception applies to it. *See* Am. Pet. at 28; 35 Ill. Adm. Code 720.110.

The record in this proceeding demonstrates that Lafarge’s slag dryer is a direct-fired process heater, which shares physical characteristics with devices that meet the regulatory definition of “boiler.” *See* 35 Ill. Adm. Code 720.110. As such, Lafarge’s slag dryer qualifies for the “process heater” exception under section 720.110. *Id.* Accordingly, the Board’s consideration of this factor favors designating the slag dryer as a boiler.

Efficiency of Energy Recovery (35 Ill. Adm. Code 720.132(c))

Lafarge asserts that the slag dryer has an energy recovery efficiency greater than the regulatory minimum for boilers. Lafarge first notes that the regulatory definition of “boiler” sets a standard for thermal energy recovery efficiency: “[w]hile in operation, the unit must maintain a thermal energy recovery efficiency of at least 60 percent, calculated in terms of the recovered energy compared with the thermal value of the fuel.” Am. Pet. at 34, citing 35 Ill. Adm. Code 720.110. Lafarge reports that, in order to calculate efficiency of energy recovery, it conducted a detailed analysis of its slag drying system. Am. Pet. at 29. Specifically, Lafarge developed a heat balance, which “is essentially a detailed accounting of the distribution of heat input, heat output and system losses.” Am. Pet. at 32. The heat balance provides “input variables for the thermal efficiency calculations.” Am. Pet. at 29. Ultimately, Lafarge concluded that its slag drying system “achieves a thermal energy efficiency of 79.23%, (Am. Pet. at 35, citing 40 C.F.R. 260.10(1)(iii)), exceeding the regulatory minimum of 60% recovery. *See* 35 Ill. Adm. Code 720.110.

Lafarge states that it relied on two engineering assumptions in preparing heat balance calculations. Am. Pet. at 32. The first of these, the “false air” input into the system, “takes into account devices such as expansion joints, inspection doors/ports, normal equipment wear, and any other in-leakage inherent with the system.” Am. Pet. at 32-33. Lafarge states that a false air value of 10% is an “accepted assumption” for “newer combustion equipment and mineral drying systems.” Am. Pet. at 32. The second assumption, “shell radiation,” accounts for heat lost from the dryer. Am. Pet. at 33. Lafarge states that an assumption of 2.5% for shell radiation is generally accepted for heat losses from newer equipment such as its dryer. *Id.*

Lafarge notes that, in requesting more information regarding the original petition, the Board sought documentation or affidavits regarding the assumptions made in calculating the

energy recovery efficiency. *See* Am. Pet. at 33-34. In response, Lafarge submitted the affidavit of David Ledesma, who “provides engineering support for Lafarge’s cement manufacturing and mineral processing facilities,” including the Alpena and Chicago plants. Am. Pet. at 34; Am. Pet., Exh. I. Mr. Ledesma states the opinion,

based on project experience, engineering judgment, consultation with other engineering professionals and a reasonable degree of scientific certainty, that use of a value of 10% for the ‘false air’ assumption and a value of 2.5% for the ‘shell radiation’ loss assumption are appropriate in conducting a heat balance calculation for a slag dryer used for the production of slag cement.” Am. Pet., Exh. I.

The record in this proceeding demonstrates that Lafarge’s slag dryer achieves a thermal energy recovery efficiency of 79.23%. With efficiency exceeding 60%, the slag dryer shares physical characteristics with devices that meet the regulatory definition of “boiler.” *See* 35 Ill. Adm. Code 720.110. Accordingly, the Board’s consideration of this factor favors designating the slag dryer as a boiler.

Use of Exported Energy (35 Ill. Adm. Code 720.132(d))

Lafarge contends that the slag dryer uses exported energy in a manner consistent with the Board’s definition of a boiler. Lafarge notes that the definition of “boiler” specifies “[t]he unit must export and realize at least 75 percent of the recovered energy, calculated on an annual basis. In this calculation, no credit may be given for recovered heat used internally in the same unit.” Am. Pet. at 35-36; 35 Ill. Adm. Code 720.110. Lafarge states that “[i]nternal use of the recovered heat only occurs during preheating every time the system is started” and that “preheating hours account for 1.5% of the total operating hours in a year.” Am. Pet. at 36. Lafarge therefore concludes that, “[w]ith the loss of 1.5 percent of the fuel heat input due to preheating the dryer, the annual energy recovery is estimated to be 79.23%.” *Id.*

The record in this proceeding demonstrates that Lafarge’s slag dryer exports and realizes at least 75% of the recovered energy, calculated on an annual basis. In this regard, it shares physical characteristics with devices that meet the regulatory definition of “boiler.” *See* 35 Ill. Adm. Code 720.110. Accordingly, the Board’s consideration of this factor favors designating the slag dryer as a boiler.

Use as “Boiler” (35 Ill. Adm. Code 720.132(e))

Lafarge argues that the slag dryer is functionally equivalent to a boiler. Lafarge states that “[d]irect-fired dryers and process heaters are widely used in the production of cement and other non-metallic mineral products.” Am. Pet. at 36. Lafarge notes that it operates a large Portland cement manufacturing plant near Alpena, Michigan. Am. Pet. at 38. That plant has permission from the Michigan Department of Environmental Quality (DEQ) to use off-specification used oil as fuel in its raw grind dryers. *Id.* Lafarge states approval by the DEQ was based on a demonstration that the grind dryers satisfied the physical boiler criteria established by

USEPA and adopted by both Illinois and Michigan, making use of used oil fuel in the dryer a legitimate use for energy recovery.” *Id.*; *see* Am. Pet., Exh. D (DEQ correspondence).

Lafarge maintains that the slag dryers in Chicago and Alpena are virtually identical combustion sources with respect to the physical criteria contained in the regulatory definition of “boiler,” including integral design, combustion efficiency, and energy recovery. Am. Pet. at 38-39. Lafarge suggest that DEQ’s determination that the Alpena dryer has the physical characteristics of a boiler is persuasive evidence that the Chicago dryer is the type of combustion source “in common and customary use as a ‘boiler’ functioning primarily to produce steam, heated fluids, or heated gases.” Am. Pet. at 39, citing 720 Ill. Adm. Code 720.132(e). Lafarge further argues that, if the Board grants a boiler designation in this case, that result would be consistent with the findings of other environmental regulatory agencies. Am. Pet. at 39.

The record in this proceeding shows that Lafarge’s slag dryer is commonly and customarily used as a boiler functioning primarily to produce steam, heated fluids, or heated gases. Accordingly, the Board’s consideration of this factor favors designating the slag dryer as a boiler.

Other Relevant Factors (35 Ill. Adm. Code 720.132(f))

Lafarge states that federal used oil regulations specify both procedures and criteria for making a case-by-case determination that a particular combustion device such as its slag dryer should be considered a “boiler” for the purpose of using off-specification used oil fuel. Am. Pet. at 39, citing 40 C.F.R. 260.32 (criteria), 40 C.F.R. 260.33 (procedures). Lafarge notes that the Board “has completed ‘identical-in-substance’ rulemakings to adopt these federal RCRA regulations as the Illinois regulations applicable to the combustion of off-specification used oil in boilers and similar combustion devices.” Am. Pet. at 39; *see* RCRA Update, USEPA Regulations (April 24, 1984 through June 30, 1985), R85-22 (Dec. 20, 1985).

Lafarge notes that, in the preamble accompanying publication of the rules in the *Federal Register*, USEPA “explained the scope and discussed application of the rules to specific fact patterns.” Am. Pet. at 39. Lafarge urges that “the justifications set forth by USEPA to explain and interpret the criteria for making ‘case-by-case’ boiler determinations can and should be relied upon by the Board.” Am. Pet. at 40. Specifically, USEPA in that preamble elaborated on four factors that distinguish industrial boilers from non-industrial boilers for the purpose of allowing the burning of off-specification used oil for fuel. *Id.*, citing 50 Fed. Reg. 49164. First, because industrial boilers are less numerous and are located in less populated areas, those sources pose less risk of exposing individuals to hazardous emissions from burning off-specification used oil fuels.” Am. Pet. at 40-41. Second, industrial boilers are more likely to be operated by trained personnel. *Id.* Third, industrial boilers are more likely to be “equipped with combustion controls sophisticated enough to maintain peak combustion efficiency when burning fuels the unit is not designed to burn.” Am. Pet. at 40. Finally, “many industrial furnaces and some boilers are equipped with particulate control equipment that may adequately control emissions from metal-bearing waste fuels. Am. Pet. at 40-41, citing 50 Fed. Reg. 49182.

Addressing those factors, Lafarge first notes that its plant “is located in a heavily industrialized area of Cook County that is remote from any residential development.” Am. Pet. at 41; *see* Am. Pet., Exh. B (USEPA map of vicinity of plant). Second, Lafarge states that “[t]he Grinding Plant and the drying system, in particular, is operated by trained personnel.” Am. Pet. at 41. Third, Lafarge notes that “[t]he slag dryer is equipped with [] state-of-the-art, efficient combustors and operating controls to maximize complete combustion of the fuels.” *Id.* Finally, Lafarge states that the dryer incorporates a fabric filter baghouse particulate control system with a typical capture and removal efficiency greater than 99.9%. Am. Pet. at 42. Lafarge concludes that, in addition to satisfying physical criteria established by the Board, its dryer also satisfies non-physical criteria that justify combustion of off-specification used oil. *Id.*

The record in this proceeding demonstrates that Lafarge’s slag dryer generally satisfies these non-physical criteria. Accordingly, the Board’s consideration of this factor favors designating the slag dryer as a boiler.

AGENCY AMENDED RECOMMENDATION AND BOARD ANALYSIS

In its amended recommendation, the Agency recommended that the Board grant Lafarge’s petition provided that Lafarge addresses issues relating to the need for additional air pollution control devices or the modification of existing equipment and to environmental impacts. Am. Rec. at 1, 3-4; *see* Am. Pet. at 16-26.

As in its original petition (Pet. at 12-13), Lafarge in its amended petition proposed specific language “for a Board order that would approve the requested case-by-case boiler determination.” Am. Pet. at 17-18. Lafarge notes that the Board asked whether the use of off-specification used oil in the slag dryer would require additional air pollution control devices or any modification of existing equipment. Am. Pet. at 18. In the event that additional devices or modifications are necessary, the Board also sought cost information. *Id.*

Lafarge does not expect that it will need to add new air pollution control devices or modify existing equipment. Lafarge stresses that “[t]he slag dryer is equipped with a modern, high-efficiency fabric filter baghouse particulate control system to minimize the release of particulate matter and other air contaminants in the exhaust gases.” Am. Pet. at 19. Lafarge reports that systems of this kind typically achieve capture and removal efficiency of more than 99.9%. *Id.* Lafarge further reports that the dried slag drawn into exhaust gases and captured in the baghouse is returned to the production process. *Id.* “Consequently, there exists a strong economic incentive to operate the fabric filter baghouse at maximum removal efficiency.” *Id.*

In addition, Lafarge “has estimated the potential particulate emissions from utilizing up to 500,000 gallons of off-specification used oil as a supplemental fuel in the slag dryer.” Am. Pet. at 19. While Lafarge is allowed to emit 6.70 tons per year of particulate matter under its current Lifetime Operating Permit, “maximum potential PM emissions resulting from combustion of off-specification used oil are predicted at 0.03 tons/year.” *Id.*; Am. Pet., Exh. F. Also, while Lafarge is allowed to emit 3.05 tons per year of PM₁₀, “maximum potential PM₁₀ emissions resulting from combustion of off-specification used oil are predicted at 0.02 tons/year.” Am. Pet. at 19; Am. Pet., Exh. F. Based on these predictions, Lafarge concludes that

neither additional pollution control equipment nor modification of existing equipment is required to control emission resulting from the use of off-specification used oil in the slag dryer. Am. Pet. at 19-20. Furthermore, Lafarge notes that the use of off-specification used oil would likely be considered a “change in the method of operation,” which has to be approved by the Agency through its permitting process. Am. Pet. at 20, citing 35 Ill. Adm. Code 201.

The Agency appears to harbor some doubt about Lafarge’s statements on this issue. In its amended recommendation, the Agency noted Lafarge’s “belief that the combustion of off-specification used oil as a supplemental fuel in the slag dryer will not require additional pollution control equipment.” Am. Rec. at 3, citing Am. Pet. at 20. However, the Agency also noted Lafarge’s claim that specification used oil did not generate savings sufficient to justify the investment required to burn used oil but that use of less-expensive off-specification used oil would justify that investment. Am. Rec. at 3, citing Am. Pet. at 14. The Agency believes that, taken together, these claims suggest that burning used oil would require new or modified pollution control equipment. Am. Rec. at 3. In addition, the Agency notes that Lafarge does not provide costs of using natural gas in the slag dryer and states that “[t]his information could be useful in analyzing the equipment issue.” *Id.*

In its response to the amended recommendation, Lafarge addresses the Agency’s query whether there may be inconsistency between Lafarge’s statement regarding the adequacy of existing pollution control equipment and its statement regarding investments needed to burn used oil in the slag dryer. Lafarge notes that the Plant “is designed and permitted to utilize natural gas as the sole fuel for the slag drying system.” Resp. at 4. If the Board grants its requested relief, Lafarge states that physical improvements will be necessary to accommodate the burning of used oil as an alternate fuel. *See* Resp. at 5. Lafarge further states that the investment referred to in its amended petition encompasses “ancillary equipment . . . needed to receive, store, convey and combust the supplemental used oil fuel.” Resp. at 5. Accordingly, Lafarge’s projected costs of using off-specification used oil “do not include new pollution control equipment or modifications to the existing control equipment.” *Id.* Lafarge states that it “continues to believe that no modification to the existing baghouse control equipment will be required to further control any non-gaseous particulate emissions.” Resp. at 3-4. Lafarge further states that it “continues to believe that no additional pollution control equipment will be required to control emissions from the combustion of off-specification used oil as supplemental fuel in the slag dryer. *Id.* at 4.

Also in its amended recommendation, the Agency stated that information regarding the cost of burning natural gas in the slag dryer “could be useful in analyzing the equipment issue here.” Am. Rec. at 3. In its response to the amended recommendation, Lafarge characterizes its natural gas prices and contract terms as “extremely sensitive information the release of which could jeopardize Petitioner’s profitability and damage existing contractual relationships with suppliers and customers. Resp. at 5; *see* Am. Rec. at 3. Because Lafarge argues that the Agency has not identified any substantive criteria that this information would satisfy and that the Agency states only that the data “could be useful” (Am. Rec. at 3), Lafarge “respectfully declines” to submit that data “[u]nless absolutely necessary to secure the relief requested from the Board.” Resp. at 5. If the Board considers that information necessary, Lafarge states it will request that it be treated as proprietary information under the Board’s procedural rules. Resp. at 5-6; *see* 35 Ill. Adm. Code 130.100 *et seq.*

The Board finds that Lafarge's response has satisfactorily addressed any apparent inconsistency between its statements regarding the sufficiency of its existing pollution control equipment and the need for investment in the slag dryer. *See Resp.* at 3-6. Accordingly, the Board cannot conclude that there remains any genuinely contested issue regarding equipment. Thus, the Board need not and does not determine whether those natural gas price data qualify for protection as trade secrets or other non-disclosable information. *See* 35 Ill. Adm. Code 130.100 *et seq.*

In its amended recommendation, the Agency also stated that Lafarge's "various references to sulfur dioxide emissions do not appear to be consistent." *Am. Rec.* at 4. Specifically, the Agency noted that Lafarge has had referred both to a "negligible" increase in those emissions and to an increase from 1.23 tons per year to 37.13 tons per year. *Id.* at 3-4, citing *Am. Pet.* at 17, 24.

Generally, Lafarge argues that any negative environmental impact of burning off-specification used oil would be balanced by the environmental benefit. Specifically, Lafarge states that the increase in SO₂ emissions will be offset by the reduced use of raw materials and the reuse of blast furnace slag. *See Am. Pet.* at 23-25.

Because the Agency responded that Lafarge's slag dryer does not satisfy the regulatory definition of a boiler, Lafarge states the dryer does not now use off-specification used oil as fuel. *Am. Pet.* at 20-21. Lafarge states that designating the dryer as a boiler and allowing the use of off-specification used oil as fuel would have only one consequence: "a change in the air pollutant emissions from the slag dryer." *Am. Pet.* at 21.

Without the requested boiler designation, the dryer uses natural gas as its primary fuel, and emissions from the combustion process are authorized under an Agency permit. *Am. Pet.* at 21; *see Am. Pet., Exh. G* (Lifetime Operating Permit 98010053, issued June 25, 2004). Lafarge states that it complies with permit limits through "full and complete combustion of the fuel and operation of a high-efficiency fabric filter baghouse system." *Am. Pet.* at 21. Lafarge determined the effect on emissions of using off-specification used oil in its dryer. *Am. Pet., Exh. F.* Assuming the use of 500,000 gallons, "Lafarge estimates that there will be no increases in any of the permitted emissions other than a slight increase in the emissions of sulfur dioxide (SO₂), as compared to current emissions from combustion of natural gas." *Am. Pet.* at 22. Lafarge's exhibit shows that combustion of off-specification used oil potentially results in emissions of 37.13 tons per year of SO₂, which exceeds the allowable dryer emissions of 1.23 tons per year (*Am. Pet., Exh. G*) and also exceeds the 0.59 tons per year reported for 2004 (*Am. Pet., Exh. E*). Lafarge notes that use of off-specification used oil will receive review and approval by the Agency and that the Agency may require issuance of a construction permit, a modified operating permit, or both. *Am. Pet.* at 24. Lafarge argues that "[t]he permitting process would ensure that all emissions associated with combustion of used oil fuel would be in full compliance with all applicable regulatory requirements and environmental standards."

In its amended recommendation, the Agency notes that the amended petition "indicates that a *negligible* increase in sulfur dioxide emissions is the only emissions change expected from

the utilization of off-specification used oil.” Am. Rec. at 3, citing Am. Pet. at 5 (emphasis added). The Agency also notes that the amended petition states that emissions of sulfur dioxide resulting from the combustion of off-specification used oil would be 37.13 tons per year, which exceeds the maximum emission allowance of 1.23 tons per year. Am. Rec. at 3-4, citing Am. Pet. at 24. The Agency states that these statements “do not appear to be consistent and should be clarified by Petitioner.” Am. Rec. at 4.

In response, Lafarge acknowledged that the term “‘insignificant’ would have been more accurate to characterize the expected emissions increase.” Resp. at 7. Specifically, Lafarge argues that sulfur dioxide emission would not be “significant” as that term is employed in the Board’s air permitting regulations. *Id.*; see 35 Ill. Adm. Code 203.209(a)(3) (threshold of 40 tons per year). Lafarge argues that its potential annual increase falls short of that threshold. See Resp. at 7. Lafarge “reaffirms the accuracy of the emissions estimates” it provided to the Board in its amended petition. Resp. at 7; see Am. Pet., Exh. F. Also, Lafarge emphasizes that, with the exception of sulfur dioxide, “[a]ll air emissions associated with combustion of off-specification used oil fuel would be less than the allowable emissions under the current Lifetime Operating Permit.” Resp. at 7-8; see Am. Pet., Exh. F. Lafarge stresses that it has repeatedly acknowledged that the proposal to burn used oil in the slag dryer will be reviewed and approved by the Agency through the issuance of a construction permit and modification of the existing operating permit. Resp. at 8; see Am. Pet., Exh. G (revised permit issued June 25, 2004).

Addressing qualitative factors, Lafarge states that its “proposal to utilize off-specification used oil fuel in the slag drying process provides significant environmental benefits by recycling and reclaiming the thermal energy from the waste oils that are generated from motor vehicles, refineries and numerous industrial processes.” Am. Pet. at 24. Lafarge states that “it takes 42 gallons of crude oil, but only one gallon of used oil, to produce two and a half quarts of new, high-quality lubricating oil.” *Id.* Lafarge also states that refining crude oil to lubricant quality requires three times the energy needed to refine used oil. *Id.* (citing USEPA Office of Solid Waste). In addition, Lafarge stresses that the use of used oil as fuel conserves natural gas. Am. Pet. at 25. Lafarge also emphasizes the indirect environmental benefit of its operations. Because its NewCem product uses blast furnace slag, its production “reduces the amount of virgin raw materials and energy that otherwise would be consumed in manufacturing Portland cement from natural raw materials.” *Id.*

In response to the Board’s request for more information on the issue, Lafarge described “the nature and source of the used oil that is likely to be available for use as a supplemental fuel for the slag dryer.” Am. Pet. at 25; see Am. Pet., Exh. H. That description, prepared by Systech Environmental Corporation, a wholly owned subsidiary of Lafarge, also summarized the quality control procedures Lafarge would institute. Am. Pet. at 25. Lafarge expects that Systech would serve as “principal contractor for identifying and qualifying used oil suppliers and making arrangements for delivery of used oil fuels to the Grinding Plant by pre-qualified suppliers.” Am. Pet. at 25-26.

Lafarge reports that it may receive used oil directly from generators that might include automotive manufacturers, steel mills, oil refineries, machine tool and die makers, automotive oil changers, and various companies with large transportation fleets. Am. Pet., Exh. H. These

entities typically generate used lubricating oil, machine oil, and motor oil suitable for energy recovery. *Id.* Lafarge also reports that it may receive used oil indirectly from processors or marketers of used oil. *Id.* These processors may produce specification or off-specification used oil, and they may employ various processes to achieve specifications including distillation, filtration, decanting, and blending. *Id.*

Lafarge characterizes used oil management as a two-step process. First, Lafarge will conduct “qualification of used oil streams and verification prior to acceptance at the plant.” Am. Pet., Exh. H. Prospective used oil suppliers will complete a profile form providing specified information about their used oil stream and certifying compliance with applicable used oil regulations. *Id.* Prospective suppliers may also be asked to provide a sample for testing. *Id.* Second, Lafarge will conduct verification before accepting used oil arriving at its Plant. *Id.* After verifying that a shipment of used oil has been pre-qualified, Lafarge will take a representative sample. One portion of that sample will be analyzed for PCBs and another portion will be retained for a regular analysis of a composite sample. *Id.* Lafarge submitted to the Board a table showing its analytical methods and the frequency of its analysis for the parameters to be measured in the various samples. *Id.* “Any load of used oil that has been mixed with hazardous waste or is determined to be contaminated with TSCA [Toxic Substances Control Act of 1976]-regulated PCB will be rejected and returned to the used oil customer.” *Id.* Finally, Lafarge states that used oil stored at the Plant will be in “approved above ground storage tanks with secondary containment” and that personnel will oversee off-loading of used oil and ensure the accurate completion of paperwork. *Id.*

In this proceeding, the Board determines on a case-by-case basis whether Lafarge’s slag dryer is a “boiler” even though it does not otherwise meet the regulatory definition of that term. 35 Ill. Adm. Code 720.132; *see* 35 Ill. Adm. Code 720.110. The Board makes that determination in its conclusion and order below. The Board notes that the Act allocates permitting authority to the Agency (*see* 415 ILCS 5/4(g, h) (2004)), including the authority to ensure that emissions from the slag dryer comply with all applicable requirements.

CONCLUSION

For the reasons described above, the Board finds that Lafarge has provided sufficient justification under section 720.132 (35 Ill. Adm. Code 720.132) and determines that the slag dryer at its South Chicago Slag Grinding Plant is a “boiler by designation” under section 720.110 (35 Ill. Adm. Code 720.110). This determination allows Lafarge to use the slag dryer for combustion of off-specification used oil for energy recovery, in compliance with 35 Ill. Adm. Code 739.161 and subject to compliance with all other applicable federal and state permits, standards, and requirements and any modifications thereto.

This opinion constitutes the Board’s findings of fact and conclusions of law.

ORDER

1. The Board finds that Lafarge has provided sufficient justification under 35 Ill. Adm. Code 720.132 and determines that the slag dryer operated by Lafarge at

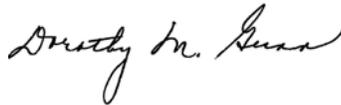
its South Chicago Slag Grinding Plant located at 2150 East 130th Street in Chicago is a “boiler by designation” under 35 Ill. Adm. Code 720.110.

2. As a “boiler by designation,” the slag dryer at Lafarge’s South Chicago Slag Grinding Plant can use off-specification used oil for energy recovery in compliance with 35 Ill. Adm. Code 739.161 and subject to compliance with all other applicable federal and state permits, standards, and requirements and any subsequent modifications thereto.

IT IS SO ORDERED.

Section 41(a) of the Environmental Protection Act provides that final Board orders may be appealed directly to the Illinois Appellate Court within 35 days after the Board serves the order. 415 ILCS 5/41(a) (2004); *see also* 35 Ill. Adm. Code 101.300(d)(2), 101.906, 102.706. Illinois Supreme Court Rule 335 establishes filing requirements that apply when the Illinois Appellate Court, by statute, directly reviews administrative orders. 172 Ill. 2d R. 335. The Board’s procedural rules provide that motions for the Board to reconsider or modify its final orders may be filed with the Board within 35 days after the order is received. 35 Ill. Adm. Code 101.520; *see also* 35 Ill. Adm. Code 101.902, 102.700, 102.702.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, certify that the Board adopted the above opinion and order on April 20, 2006, by a vote of 4-0.



Dorothy M. Gunn, Clerk
Illinois Pollution Control Board