UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 7
901 N. 5th STREET
KANSAS CITY, KANSAS 66101

AIR PERMITTING AND COMPLIANCE BRANCH

March 29, 2004

LeAnn Tippett, Staff Director
Air Pollution Control Program
Missouri Department of Natural Resources
P. O. Box 176
Jefferson City, Missouri 65102

Dear Ms. Tippet:

We appreciate the opportunity to review and comment on the proposed PSD permit for the Holcim Lee Island project. Attached are a number of comments we hope you will consider as the department makes a final permit decision. The comments are generally arranged in priority order from highest to lowest. Most are intended to improve the enforceability of the permit and the completeness of the permitting record.

We commend the staff and department for all of the effort put into the permit project. In particular, we appreciate MDNR's commitment to protecting air quality in the St. Louis area and believe that the innovative NO_x mitigation approach taken in the permit is a step in the right direction.

If you have any questions about our comments or if we can be of assistance as you make your final permit decision, please don't hesitate to contact Jon Knodel at 913-551-7622 (or knodel.jon@epa.gov) or myself at 913-551-7323 (or heiman.joann@epa.gov).

Sincerely,

JoAnn M. Heiman
Chief
Air Permitting and Compliance Branch

Attachment

EPA Region 7 Comments on
Draft Prevention of Significant Deterioration (PSD) of Air Quality Permit for
Holcim, Lee Island Portland Cement Project

Table of Contents

ICT vs. BACT and Other NO_x Issues

EPA believes that the department's characterization of selective non-catalytic reduction (SNCR) as innovative control technology (ICT) is not supported by the record nor does the record show that the proposed decision is a reasonable application of top down best available control technology (BACT) review. In addition, the concerns summarized in the permit record appear to be more a question of uncertainty in technology transfer rather than whether SNCR is innovative or not. As a consequence EPA recommends that unless SNCR is selected as best available control technology (BACT), the record should be supplemented as described below.

We believe, based on review of information currently in the record, that application of SNCR to the proposed Holcim Lee Island plant is reasonable as BACT, despite MDNR's elimination of SNCR as BACT on environmental and economic grounds. MDNR appears to have based its decision to eliminate SNCR as BACT on two concerns, 1) the potential for adverse opacity from secondary plume formation and 2) that SNCR is cost unreasonable. These concerns do not square with past determinations made by the department, nor does the permit record establish a basis for the changes signaled by the draft Holcim permit.

Over the past several years, MDNR has issued a number of PSD permits requiring NO_x controls; in particular for selective catalytic reduction on combined cycle turbines. The only combined cycle turbine projects not required to install SCR were 1) a very small unit at a university which was able to show that the costs were unreasonable at approximately $6,000 per ton NO_x removed, and 2) another which was denied by the department on the basis of inadequate BACT and later withdrawn. Holcim estimates they can remove NO_x with SNCR at approximately $1,354 per ton. Most importantly, this cost is well within the range for which the department has required additional NO_x controls in past permitting actions. In addition, we note that it is well within the cost guidelines established for NO_x reductions under EPA's federal NO_x SIP call, the recently proposed Interstate Air Quality Rule, and certain New Source Performance Standards; all which have less rigorous control objectives than PSD. Lastly, the cost is below that determined to be reasonable in EPA's Tier II guidance for NO_x BACT at refineries. The record does not provide a clear rationale why the lower cost threshold is appropriate to eliminate SNCR as BACT. Further, the control threshold contemplated for this project potentially sets a precedent for future PSD projects. In summary, EPA believes that SNCR should not be eliminated on the basis of cost.

With respect to opacity, there are regulatory alternatives for modifying the limit if a source is otherwise in compliance with all of its standards but is unable to comply with opacity. For example, the department with the Missouri Air Conservation Commission and EPA approval, established a site specific opacity limit for the project at the U.S. Army Training Center at Fort Leonard Woods. In this case, the department issued a variance from the state opacity limit and EPA ultimately approved the alternate limit into the federally approved SIP. In addition, 40 CFR 63.6(h)(9), found in the MACT [maximum achievable control technology] general provisions recognizes that adjustments to opacity may be necessary. While this provision does not govern issuance of a BACT limit in the PSD permit, it is instructive of how alternate opacity limits may be established. These procedures provide the following:

> 63.6(h)(9) Adjustment to an opacity emission standard.
>
> (I) If the Administrator finds under paragraph (h)(8) of this section that an affected source is in compliance with all relevant standards for which initial performance tests were conducted under §63.7, but during the time such performance tests were conducted fails to meet any relevant opacity emission standard, the owner or operator of such source may petition the Administrator to make appropriate adjustment to the opacity emission

standard for the affected source. Until the Administrator notifies the owner or operator of the appropriate adjustment, the relevant opacity emission standard remains applicable.

(ii) The Administrator may grant such a petition upon a demonstration by the owner or operator that—

(A) The affected source and its associated air pollution control equipment were operated and maintained in a manner to minimize the opacity of emissions during the performance tests;

(B) The performance tests were performed under the conditions established by the Administrator; and

(C) The affected source and its associated air pollution control equipment were incapable of being adjusted or operated to meet the relevant opacity emission standard.

(iii) The Administrator will establish an adjusted opacity emission standard for the affected source meeting the above requirements at a level at which the source will be able, as indicated by the performance and opacity tests, to meet the opacity emission standard at all times during which the source is meeting the mass or concentration emission standard. The Administrator will promulgate the new opacity emission standard in the Federal Register.

(iv) After the Administrator promulgates an adjusted opacity emission standard for an affected source, the owner or operator of such source shall be subject to the new opacity emission standard, and the new opacity emission standard shall apply to such source during any subsequent performance tests.

The reliance on adverse opacity to exclude SNCR raises a number of other questions which are not addressed in the permit record. For example, is opacity more environmentally significant than NO_x? What are the anticipated frequency and magnitude of opacity exceedances? What if these exceedances occurred on only one day? Or are marginally non-compliant? Should SNCR be eliminated as BACT for the other 364 days? Other cement kilns have experienced problems with secondary plume formation whether they have SNCR installed or not. If SNCR is not the root cause for the opacity problems, should SNCR be eliminated anyway? If opacity is of such significance, should additional weight be given to selection of scrubbing technology which would help to reduce secondary plume formation? In summary, the record should consider these questions and alternatives for establishing alternate opacity limits, if needed, before disqualifying SNCR as BACT.

SNCR was previously pilot tested at the Lehigh Cement plant in Mason City, Iowa. Based on the success of that test, SNCR was recently required as BACT in a PSD permit issued to the company. For more details, see the PSD permit at http://aq48.dnraq.state.ia.us/PSD/1701005/PSD_PN_03-490/03A968P.pdf, and fact sheet at http://aq48.dnraq.state.ia.us/PSD/1701005/PSD_PN_03-490/Fact Sheet.pdf. The Iowa Department of Natural Resources concluded that the plant was capable of installing SNCR as retrofit technology as part of a major plant upgrade. It is our belief that SNCR capable of being properly integrated into a green field plant design as well. Missouri also required SNCR in a "synthetic minor to avoid PSD" permit

recently issued to Continental Cement near Hannibal, MO, in anticipation of a major plant upgrade. Both projects create a strong presumption that SNCR technology is technically and economically viable as BACT.

The proposed ICT determination raises other interesting issues. ICT is generally reserved for first time innovations and has been used in very few circumstances. For example, we are not aware of any PSD projects in region 7 since 1976, either approved by the region or states, which have made use of these provisions. Yet, a few of these projects included novel aspects, such as use of SCR to control NO_x emissions from powder river basin coal or high temperature SCR to control NO_x emissions from a simple cycle turbine; both firsts in the region. In addition, the ICT provisions were used in other areas of the country in the 1980's to promote a shift from high-VOC to low- or no-VOC coatings at automobile manufacturing plants. In this case, the SNCR is a widely used NO_x control technology, now in the early stages of being applied to portland cement operations. Since the technology has been previously required on kiln projects, it appears the Holcim project may no longer be the first to apply the technology. In addition, the technology is widely applied to kilns throughout Europe. Other NO_x technologies like SCR, which have only been applied to one cement kiln in the world seems a more likely candidate for ICT than SNCR. Lastly, we believe that approval by other states impacted by the source is an important feature of the ICT requirement. Therefore, approval by the Illinois governor should be obtained prior to permit issuance if Missouri decides to authorize ICT as part of its final permit decision.

In conclusion, in order to exclude SNCR as BACT the permit record must clearly document that the technology is neither supportable from a technological or economical point of view. We encourage the department to carefully review and respond to the issues raised above. We also reserve our option to comment further and respond accordingly following the final permit decision.

BACT Averaging Times

Based on the record, the averaging times established for the SO2, NOx, and CO BACT emission limitations are not justified; both for purposes of reasonable compliance verification and for comparison of technology limits to other portland cement PSD projects. Currently, neither the permit application nor permit record adequately demonstrates the need for the longer annual averaging period.

Generally, EPA suggests that averaging times should be established consistent with NAAQS (national ambient air quality standards) averaging periods unless there are unique situations which require longer periods. For example, inventory control for complex surface coating operations is an area where EPA has recognized that longer averaging times, such as a 30-day rolling period, may be appropriate because of the complexity of accounting for hundreds of coatings and associated dilution and clean up solvents on a daily basis. In addition, EPA has acknowledged the need for extended averaging times for certain combustion sources with a reasonably high degree of variability in emissions. In general, EPA recommends no standard should exceed a 30-day rolling average, whether the NAAQS averaging period is longer or not. This assures a reasonable compromise between the burden of reconciling compliance calculations over short averaging periods and the need to reconcile compliance over a reasonable period of time.

For example, based on analysis of hourly NO_x data from turbine projects with a high degree of variability, it is clear that extending the averaging period has the practical effect of lowering the emission rate. For example, identical continuous emissions data averaged over 1-, 3-, 24-, 168- hours and 30-days shows that the 30-day average is 16%, 36%, 68%, and 90%, respectively, of the short-term 1-hr emissions

average. These results may not be typical of the variability found in the portland cement industry, but nevertheless illustrate the impacts of changing the averaging time. We did not analyze the impacts of going from a 30-day to annual standard since averaging periods longer than 30-days are generally not supported by EPA.

Since the annual BACT limits proposed in the draft Holcim PSD permit appear to be in the same ranges as those specified as 30-day rolling averages in other portland cement permits, we recommend that the averaging period for the Holcim permit should not exceed 30-days. If the adjustment from a 30-day to annual standard is similar to that observed for turbines, then the BACT limits in the draft Holcim permit may be higher than what other kilns with identical numerical BACT limits can meet based on the shorter 30-day averaging period. If the department believes that a longer averaging period is necessary, then the permit record should clearly document the need for such period, including the underlying need and consideration of lower numerical limits for the longer averaging times.

NO_x BACT

Previous comments on ICT and averaging times notwithstanding, we have a number of comments concerning the NO_x BACT emission limitations.

The permit record reports the cost of SNCR control as $1,354 and $3,833 per ton removed on the basis of NO_x-alone and combined NO_x and CO emissions, respectively. This was apparently done because CO emissions are expected to increase if SNCR is selected as BACT. We noted earlier that the lower cost figure is well within the range used to select NO_x controls as BACT. In addition, we also consider the projected $3,833 per ton NO_x removed to be reasonable within the range of other add-on NO_x controls applied in Region 7 and across the country, even though we do not typically consider combined pollutants when considering BACT costs.

Unless the final permit record justifies a technology other than SNCR as BACT, we encourage the department to establish a limit of 2.4 pounds NO_x per ton clinker limit (30-day rolling average) with additional, tighter seasonal controls as appropriate. An optimization period during which Holcim would have a higher limit, such as 2.8 pounds NO_x per ton clinker (30-day rolling average) also appears acceptable as BACT. We recommend that BACT controls should be applied year-round.

If the department ultimately eliminates SNCR as BACT on the basis of the combined cost of NO_x and CO, then the record should carefully document its rationale in light of past BACT determinations and the precedent this determination may have for future permitting actions. One implication of using the combined NO_x and CO costs to eliminate SNCR as BACT, where the technology is otherwise reasonable for NO_x-alone, is that control of CO seems to take priority over NO_x. Given the need for summer-time NO_x control to minimize ozone in St. Louis and the recent discussion in the proposed Interstate Air Quality Rule that this part of the country can benefit from NO_x control in the winter, putting a priority on CO over NO_x requires careful documentation.

If more than one NO_x limit is established for initial and on-going operations, to allow for a period of optimization of the multi-stage-combuster, then we recommend that the NO_x limit should be reset when the new, lower standard takes over. Unless the new compliance period begins fresh, the company may have to over-comply during the subsequent period to meet the lower standard. As an example, on the first day after the transition, the source would use the lower emission for that day in conjunction with the higher emissions collected during the previous compliance period (e.g. 29 days). This may make it very

difficult to comply until the averaging time includes only values from the new, lower standard and may potentially put the company at compliance risk.

To ensure that Holcim optimizes its cement manufacturing process and air pollution controls as expeditiously as possible, while minimizing emissions, we encourage the department to include a rigorous technology update plan in the permit, similar to that required for the Kansas City Power and Light Hawthorn PSD permit. The NO_x alternative emission limitation benchmarks found in the acid rain rules at 40 CFR Part 76 also provide a good framework for evaluating progress. We envision that during the optimization period, these periodic reports, ideally made each quarter, would include detailed information on emissions, kiln performance, control equipment performance, and any other impediments to timely compliance with the permit.

Lastly, if the department anticipates that special provisions may be necessary to address the potential for adverse opacity, we recommend including those procedures in the final permit irrespective of what NO_x BACT technology is selected.

PM_{10} and SO_2 Increment Consumption Baseline Areas

In light of recent questions raised by the Federal Land Manager about increment consumption near one of the Missouri Class I areas, EPA recently performed an analysis of all PSD permit applications received since the origin of the PSD program. The purpose of this review was to determine how increment baseline areas in Missouri have been set over the years.

Given the complexity of the issue, both from a technical and legal point of view, we anticipate a number of discussions with MDNR and EPA Headquarters for some time into the future. In addition, it is likely that state and federal rule making will be necessary to properly codify the baseline areas throughout the state. In the meantime, EPA believes that MDNR has performed the Holcim Class I and II analysis consistent with their interpretation of state rules and that this issue is not an impediment to final PSD permit issuance. Nevertheless, if subsequent modeling shows that PM_{10} or SO_2 concentrations exceed the Class I or II increments as a result of Holcim's operations, then additional mitigation will be required at that time.

Conditions That Validate Modeling Results

The air quality demonstration is based on the air dispersion modeling and the modeling represents the operation of the facility and the operation of nearby sources. The quarry and plant haul roads at Holcim are major contributors to the predicted PM_{10} concentrations. As such, the number and type of vehicles modeled in the modeling demonstration should be part of the permit.

The modeling also assumed that the Holcim's property line is fenced and as a result no receptors were modeled within the indicated property line. However, the BNSF railway that goes through the eastern part of the facility is ambient air and appears not to have been modeled. If the areas is not fenced or public access is not otherwise restricted, then the entire plant site would have to be modeled as though the area is ambient air. We recommend that the department supplement the public record and establish the appropriate conditions as necessary to assure that the assumptions used in the model are properly reflected in the permit.

Initial Compliance Testing for PM_{10} Point Sources

The permit does not appear to require initial compliance verification testing for PM_{10} point sources. Since compliance with the PSD permit is determined independently from the MACT and the Title V operating permit, all testing should occur within a reasonable period of time following startup of the plant. We recommend a period of between 60 days after achieving maximum production and 180 calendar days following startup. In addition, we recommend that for any testing of PM_{10}, that the permit explicitly require collection of the filterable and condensible fractions pursuant to approved test methods such as those found in 40 CFR Part 51, Appendix M, Methods 201, 201A, and 202. If testing is deferred or delayed beyond the typical testing period following startup of the plant, the record should provide a clear basis for doing so.

Ongoing Compliance Verification for PM_{10} Point Sources

Condition (2)(A)1.E. requires Holcim to submit an operations and maintenance plan describing how pressure drop measurements for each baghouse will be used to provide a reasonable assurance of compliance. While this approach may be a useful supplement for baghouses not otherwise required to monitor under the MACT standard, it appears to deviate substantially from the monitoring that will be required under the MACT standard for the in-line kiln and raw mill, the clinker cooler, raw or finish mills, and raw material dryers. To assure that the terms of the PSD permit can be independently verified prior to issuance of the Title V permit or the required MACT compliance demonstration, we recommend that MACT-compliant monitoring be specified directly in the PSD permit for all emission units with a monitoring requirement under the MACT. We also encourage installation, operation, maintenance, calibration, and certification of this monitoring equipment within 60 days of the date the plant achieves its maximum production, but no later than 180 days after startup of the cement production operations. The monitoring specified in the permit should include continuous opacity monitors (COMS), bag house leak detector systems (BHLD), visible emission assessments, and consideration of PS-11 certified continuous particulate matter emission monitors (PM-CEMS), for all equipment required to monitor under the MACT.

For any remaining baghouses for which a pressure drop monitoring system is retained, the record should clarify how one measurement every 24-hours is sufficient to provide a reasonable assurance of compliance on an on-going basis. Even though the units may not be subject to the Part 64 compliance assurance monitoring requirements, general guidance on the use of pressure drop monitors as a compliance assurance tool, found in EPA's "CAM Guidance Document" at http://www.epa.gov/ttn/emc/cam/ap-a8-15.pdf, recognizes that pressure drop should be measured continuously and manually recorded daily. In addition, we recommend that the language in Condition (2)(A)1.E.(IV) concerning "operating pressure drop within the design conditions specified in the manufacture's performance warranty" be removed. Unless the pressure drop range is determined during the initial stack test results, it may be possible to operate within the manufacturer's warranty but yet be out of compliance with the permit limitation. We recommend that the permit concentrate on the pressure drop range measured during initial compliance and establish appropriate bounds for which operation would continue to be in compliance with standards.

Condition (2)(A)5.D. contemplates a process where the company will submit a plan if the moisture content of the rock, on two successive occasions, is less than 1.5% moisture. If there is a high probability this will occur, we believe the permit should incorporate any necessary contingency measures now rather than later; especially if an exceedance of the moisture standard is linked to a NAAQS or

increment problem. That way, mitigation could occur immediately rather than following any delay caused by a re-evaluation. We recommend that the permit should anticipate the need for additional control and specify the measures that Holcim will have to undertake if the moisture content of the rock is less than is needed to protect the air quality analysis.

Summer Time NO_x Mitigation Plan

On Page 50 of the fact sheet, the department describes the general terms of the summer time ozone mitigation plan that Holcim must meet. In general, the plan allows Holcim to emit up to 1,822 tons of NO_x during the ozone season if it can find up to 1,006 tons of permanent offsets (corresponding to 422 ozone season credits). Based on agreements with three sources, Holcim was able to secure 530 tons of offsets (200 ozone season credits) prior to the final permit decision. These offsets are comprised of 319 tons of NO_x and 221 tons of VOC ERCs. Holcim may secure an additional 476 offsets (200 ozone credits) at is option, or elect to meet a summer time limit of 1,622 tons NO_x.

We recommend that the department supplement the record with the details of the origin of each ERC transaction, including the originating company's request to bank surplus emissions, their authorization to shift ERC to Holcim, and Holcim's request to use such credits. That way, there is no uncertainty in the permit record about the accounting for these ERCs if questions arise in the future.

In addition, the record is silent on the inter-pollutant trading of VOC for NO_x emissions. The states approved banking and trading rule at 10 CSR 10-6.410 is silent as well. Did the department perform an analysis as part of its significance determination to show that VOC for NO_x trades result in the same air quality benefit for ozone? If so, this analysis should be included in the public record. If not, the department should clarify in the "response to comments" how VOC reductions accomplish the same level of ozone reduction as NO_x in St. Louis. Until either EPA or MDNR establish a written policy or rule that details how inter-pollutant trades are best accomplished, it is prudent to document the record on the procedures used in this case.

We recommend that Condition (5) in the permit, which describes the use of ERCs towards meeting the summer time NO_x limit, include a statement that any ERC used should meet the viability standards in the state's approved banking and trading rule found at 10 CSR 10-6.410.

Lastly, the NAAQS for ozone have much shorter averaging periods than the 153-day ozone season compliance period proposed in the permit. Footnote 57 on page 47 of the fact sheet indicates that a limit of 10.6 - 11.3 tons NO_x per day may be necessary to protect the ozone standard. These limits are not included in the draft permit. We recommend that the permit should include an enforceable short-term limit during the ozone season or that MDNR should provide further details in its "response to comments" document as to why such a limit is unnecessary.

SO_2 BACT

Page 28 of the fact sheet notes that wet lime scrubbing was eliminated as BACT based on its adverse incremental costs, but provides little justification beyond that provided in the application. While we generally concur that a $13,225 per ton incremental cost is high, the permit record does not clearly distinguish whether these costs are real or perceived. Because wet lime scrubbing has been installed on a number of other kilns, there is a strong presumption that these controls should be required – whether for BACT purposes or not – unless there are unique circumstances which dictate otherwise.

Holcim's BACT analysis concludes that nearly 75% of the capital cost of a wet lime scrubber derives from construction of a 78 mile natural gas pipeline from Cape Girardeau to their site. The natural gas would be used to reheat exhaust gas to assure acid droplets do not corrode the downstream equipment (e.g. ductwork and stack) or otherwise deposit near the plant site. Our principle concern is that neither the application nor the department's analysis explore the degree to which gas reheat is necessary or whether there are other acceptable design alternatives which would minimize or eliminate the need for gas reheat. If the cost for reheat is minimized or eliminated, then wet lime scrubbing may be well within the range of costs used to select BACT.

For instance, is reheat required during all periods of operation, or only those times when ambient conditions cool the exhaust gases below their acid dew point? If reheat is only required a small fraction of the time, say during the coldest months in the winter, then the fuel costs might be significantly reduced. If less gas is required because reheat is not necessary at all times, would there be sufficient quantities of interruptible or firm-supply natural gas available closer to the plant? Is it necessary for Holcim to have a non-interruptible supply of natural gas? We understand the desire for certainty of a firm gas contract, but if sufficient quantities of gas are available on an interruptible basis, is it possible to operate SO_2 controls at least part of the time in a manner that is cost feasible? If there is sufficient volume of interruptible gas available? If so, what is the frequency of curtailment in the Ste. Genevieve area? What percent of the operating time would the scrubber be unavailable as a result of gas curtailment? Are there any other seasonal considerations in the operation of the scrubber? If gas is readily available in the summer time or reheat is unnecessary, could the scrubber be operated at during those periods assuming costs prove reasonable? In addition, if gas is curtailed in winter and reheat is necessary, is it possible to curtail operation of the scrubber during those limited periods?

Further, is it possible to design special, corrosion-resistant duct work to resist the effects of the acid condensation? Many power plants operate scrubbers with special stack and duct liners to minimize the adverse effects of acid corrosion. Is this a viable solution at the Holcim plant? The materials used to protect the duct work and stack are certain to be more expensive than those selected in the absence of a scrubber, but are they cost prohibitive from a BACT standpoint?

We encourage the department to supplement the permit record in consideration of the questions raised above. If the department has already evaluated these options but has not included as part of the permit record, we encourage you to provide in the "response to comments" document. However, if these factors have not been evaluated, then we recommend that the department take a fresh look to determine if other options are feasible. For example, these options might include 1) a single SO_2 BACT limit based on wet lime scrubbing if reheat is unnecessary or sufficient interruptible natural gas is available, or 2) multiple SO_2 BACT limits; one during the periods when the wet lime scrubber can reasonably be operated and the other when only intermittent lime scrubbing is feasible.

Continuous Emission Monitoring (CEMS)

Conditions (2)(B), (2)(C), (2)(D), and (2)(E) specify BACT limitations for SO_2, NO_x, CO, and VOC in terms of mass (#/hr, annual average) and rates (#/ton clinker, annual average). In addition, Conditions (3) and (5) establish special conditions for NO_x. Each condition specifies the use of continuous monitors to measure and report emissions. We concur with the selection of continuous emission monitoring equipment. However, what is implied but not stated in the permit is that the CEMS must measure and report in terms of the applicable standards, which in this case requires additional measurement of hourly exhaust flow rates and the total amount of clinker produced. The permit should

make clear that the measurement "system" for each pollutant is comprised of the concentration monitor, a diluent correction monitor (% O_2 or % CO_2) as necessary, a flow measurement monitor, any moisture correction device (to assure consistent measurement basis), a measurement system for clinker production, and an automated data acquisition and handling system.

In addition, it is unclear when the CEMS must be installed, operational, and quality assured, and to which performance specifications the monitors must certified. For example, SO_2 NO_x, and CO CEMS (along with their diluent correction monitors) are generally designed to meet Performance Specifications 2, 3, and 4 in 40 CFR Part 60, Appendix B; even though the units at Holcim are not subject to the NSPS for these standards. In addition, mass measurement systems, which include the addition of a flow meter, are generally designed to meet Performance Specification 6. It would be beneficial for the permit to reference these requirements or some other peer-reviewed voluntary consensus standard as a permit condition.

Permit requirements for CEMS also typically provide for daily operational and calibration requirements, such as those in 40 CFR §§60.13 or 63.8 to assure adequate data collection and quality. In addition, it is important to assure the on-going quality of the data through period quality assurance procedures. Procedures, such as those in 40 CFR Part 60, Appendix F provide adequate measures. Lastly, the permit should specify when the monitors must be operational and provide quality assured data. Typically, the CEMS are installed and certified prior to or during the initial performance tests, which should occur no later than 60-180 days after initial startup of the kiln-system. Since compliance with the BACT standards is determined independent from Title V permitting, we encourage the department to include the critical CEMS benchmarks, or similar rule references, in the final PSD permit. If the monitoring requirements are deferred or otherwise delayed past the typical 60-180 day period following startup, then the record should clearly provide the justification for doing so.

CO BACT

The 6.0# CO per ton clinker, 12-month rolling average, BACT limit proposed in Condition (2)(D) appears to be very high compared to the recently issued CO BACT limit for Lehigh Cement in Mason City. As previously described, the Lehigh permit requires the use of SNCR and establishes a CO BACT limit of 3.7# CO per ton clinker, 30-day rolling average. While we understand that CO may be higher for units that use SNCR, the record does not clearly support why the Holcim limit would need to be 62% higher than a recently permitted project with similar NO_x controls. In addition, irrespective of whatever limit is set for the Holcim project, we believe that the CO BACT limit should be set in consideration of a 30-day average, unless the record clearly establishes the need for a longer averaging time.

Short Term SO_2 NAAQS-Based Emission Limits

Late during the public comment period, we received notice from the Federal Land Manager that the 3-hour and 24-hour SO_2 limits for the in-line kiln and raw mill and the coal mill, found in Condition (4)(A), may be raised from 75 to 160 grams per second (595.2 to 1,269.8. pounds per hour) and 12.5 to 34.7 grams per second (99.2 to 275.4 pounds per hour), respectively. This change was apparently prompted by a request from Holcim made during the public comment period based on new modeling that was completed.

Since the limits were originally proposed in the permit to protect an air quality related value, this change may be of interest to the public. We encourage the department to either provide for adequate

public review for this new information or explain the rationale for the change in the "response to comments" document and why the public would not benefit from further review.

CALPUFF Modeling

We generally support the approach outlined in Condition (4)(E) requiring additional CALPUFF modeling. This study will more fully characterize PM_{10} emission impacts for the unique terrain and meteorology at the Holcim site. In conjunction with the monitoring program, there should be sufficient data to determine if there are any further concerns about PM_{10} concentrations. We also agree with the general approach for mitigating any adverse impacts if the modeling shows concentrations above the NAAQS and increment standards. However, it is unclear if Holcim must submit its mitigation plan as part of the modeling submission or at some other time. In any case, if PM_{10} concentrations predicted by the CALPUFF model are above the applicable air quality or increment standards, then any mitigation should be put in place prior to the date Holcim begins operations at the Lee Island site. To assure that the review process moves forward expeditiously we recommend additional milestones for any dispute resolution that might be necessary along with a time frame during which the department will make its final decision.

It is also unclear how the CALPUFF model results might impact the final Class I analysis. Based on this uncertainty and the state-wide increment baseline area concern described elsewhere in our comments, it is possible that Holcim and MDNR may have to re-perform the Class I impact analysis to factor in the on-site meteorology.

Class I Visibility Results and Conclusion

Page 48 of the fact sheet notes that the Holcim project exceeds the visibility thresholds guidelines for Class I areas and that the department is awaiting further guidance from the Federal Land Manager. Since it is possible that the FLM may recommend additional mitigation, those recommendations should considered before the state issues its final permit recommendation. If the FLM is unable to provide their final recommendations prior to the close of the public comment period, we recommend that the state either require the necessary mitigation on its own to meet the 0.005 kg/ha/yr guideline, or continue to work with the FLM and re-open the PSD permit as necessary.

PM_{10} and Meteorology Monitoring Network

Condition (4)(D) requires Holcim to operate a network of PM_{10} monitors consistent with procedures to be approved by the department. Based on the closeness of predicted PM_{10} concentrations to the Class II increment and unavailability of CALPUFF modeling results to better understand the impact of unique terrain and meteorological features at the Holcim site on PM_{10} concentrations, we support MDNR's request to collect monitoring information. However, it is not clear when Holcim must submit the plan, by which date MDNR must act on the plan, and when Holcim must begin operation of the monitors. We recommend that the permit should include these milestones; in particular if there is a strong preference to begin data collection soon after a final permit decision is made.

Condition (4)(D)5. contemplates the number of meteorological stations to complement the PM_{10} monitoring network might be as few as one. Since the plant is already operating three meteorological monitoring sites, we recommend that these stations continue to operate throughout PM_{10} data collection and until the approved plan terminates such monitoring. We also recommend the addition of a permit

term that requires quarterly submission of the meteorological data, following some reasonable period to quality assure the data, in an approved format suitable for air dispersion modeling.

PM_{10} Quarry Haul Road Plan

Condition (2)(A)2.C. requires submission and approval of a dust suppressant control plan prior to implementation. Since the suppression equipment and application schedules should already be in place by the time the quarry operations begin – and arguably should be represented as explicit conditions in the permit – the permit should include, at a minimum, specific milestones for submission of the plan by Holcim, review by department, and any final decision dates. These dates should precede the date the first haul road is constructed.

PM_{10} Plant Haul Road Plan

Condition (2)(A)3.B. notes that the plant haul roads shall be paved in accordance with industry standards. Is there a specific ASTM or other peer-reviewed rule or standard which identifies these performance measures? Since it is likely that there are many such standards, the permit should clearly state a preference if necessary to validate the modeling assumptions. As a minimum, the permit should include a reference to the appropriate standards document, or should otherwise include explicit performance measures for paving the haul roads.

Condition (2)(A)3.C. requires the company to maintain and repair the road surface as necessary. Who verifies that this is done? The company, a MDNR air inspector, a Missouri highway inspector, or other? So that the potential for disputes is minimized, it is important that the permit clearly specify what paving standards must be met and who has the ultimate responsibility for verifying compliance with those standards.

Condition (2)(A)3.D. limits fugitive emissions beyond the "property line of origin". Is this meant to be something other than the fenced or restricted property line? If so, the condition could benefit from further description. If not, it might be less confusing to just refer to "property line".

Lastly, we recommend inclusion of explicit permit terms that mimic the assumptions used in the PM_{10} modeling. For example, the modeling takes into account the number of vehicle miles traveled and type and quantity of suppressants used to control fugitive dust from haul roads. If these conditions are not included as permit conditions, then the permit record should clearly explain why such conditions are unnecessary or should provide further detail in the fact sheet or "response to comments" document to establish a basis for the conditions under which the modeling predicted compliance with the air quality and increment standards. In any case, there must be some basis upon which the company can certify its compliance status and also upon which a state or EPA inspector may determine that the underlying conditions are being met.

TOC vs. VOC Monitoring

Condition (2)(E) establishes a VOC limit of 182 pounds per hour (30-day block average) and 0.33 pounds VOC per ton clinker (30-day block average), but proposes to monitor as TOC as required by the MACT. Is it certain that TOC equals VOC for kiln operations? If there are any exempt VOC's that would be counted by the TOC-CEMS, it is possible that Holcim could over-report an exceedance of the

standard. If this is possible, the permit should specify a TOC equivalent in lieu of the VOC limit so that compliance may be determined with minimal confusion.

Mercury Testing

Condition (6) requires Holcim to perform a single test to determine if the annual level of mercury will remain below the PSD significance threshold of 0.1 ton per year. This determination will be made by extrapolating the results from the one-time test to full production over the course of a year. While it is appropriate to include a compliance verification condition, especially given the closeness of Holcim's projected emissions to the significance threshold, it is uncertain if one test result can adequately characterize emissions throughout the operational and seasonal range of the kiln. In addition, it appears that Holcim will be optimizing and installing additional controls on the kiln over a long period of time, which may impact the mercury emission factor. We recommend that MDNR retain the mercury testing requirement, but consider addition of other periodic testing requirements to better understand the range of mercury emissions over time. Collection and analysis of 2-4 samples a year until the kiln is fully optimized would provide better assurance that the mercury emissions remain below the permitting threshold or that they are properly reviewed for BACT by the department.

Other Considerations

In General Condition (1)(A), the permit notes that Holcim must prepare a written operation and maintenance plan, including the "PCMACT sources identified in special conditions (6)(C)2." We were unable to locate this special condition in the draft permit. This may be an artifact from a prior draft and should either be removed or properly referenced.

The department should consider the addition of a general duty clause requiring Holcim to minimize emissions during all periods of operation consistent with good engineering practice. For example, the 24-month optimization demonstration period selected for NO_x may not need to be fully utilized. If the system can be optimized sooner than 24 months, the company should strive to meet the lower limits if achievable.

Condition (7) includes a disclaimer that the summary of MACT requirements is included only for informational purposes and that the company should defer to the MACT standard for an understanding of its obligations under the rules. In addition, the permit notes that this condition will expire upon issuance of the Title V operating permit. This approach is generally acceptable but should also be followed for the other federal technology standards mentioned (or not) in the permit. Specifically, the permit includes a similar summary for NSPS Subpart OOO, but doesn't include the "informational" disclaimer. Other standards, like NSPS Subpart Kb and Y, are mentioned in the Fact Sheet but not referenced in the PSD permit at all. It would be helpful if the permit treated each of these other technology requirements in the same fashion.

Pages 49 - 50 in the fact sheet describes the methodology used by the department to evaluate worst case ozone impacts from the proposed Holcim facility. We commend the department and Holcim for their efforts in assessing these impacts and believe that the analysis and associated mitigation is imperative based on the size and proximity of the Holcim facility to the former-1-hour but soon-to-be-8-hour St. Louis ozone nonattainment area. While the analysis relied on reasonably available tools, it remains uncertain whether the episodes used represent the worst case impacts on St. Louis from the Holcim plant or not. Further, even though the PSD permit presumably establishes state-of-the-art controls

for the Lee Island facility, it is possible that further analysis of control strategies in St. Louis and the surrounding area may require additional mitigation from the Lee Island plant; in particular for the new 8-hour ozone and $PM_{2.5}$ standards. MDNR should consider adding a re-opener clause or other disclaimer that issuance of the PSD permit does not exempt Holcim from further scrutiny and that the department may require 1) additional permanent reductions, if necessary, as part of the broader geographic control plan, and 2) temporary curtailment of emissions on critical ozone days.

Pages 19 - 20 in the fact sheet provide a general description of the cement production process and the types of raw materials and fuels that will be utilized in the Holcim operation. The department notes that Holcim is authorized to combust coal, petroleum coke, and tires as the primary fuel along with oil and other non-hazardous materials as secondary fuels. The summary also suggests that "as other sources of fuel become available, Holcim will review their chemical and physical properties to assess their potential for providing the necessary thermal energy to the pyroprocess". So that there is no confusion later on, the permit should make clear that Holcim is authorized to combust only those fuels that are specifically evaluated as part of this PSD permit analysis. We recommend that the permit clarify that if other fuels appear promising in the future, Holcim would be authorized to combust such fuels only after seeking approval from MDNR; following an explicit BACT analysis and opportunity for public review for each new fuel which may result in a significant increase in emissions.

Page 24 in the fact sheet describes the improvements in energy efficiency from the pre-calciner, pre-heater, multi-stage-combustion kiln at the Lee Island plant over the industry norm. This is an informative discussion, but it is uncertain how the department factored into its permit decision. For example, did the efficiency improvements influence selection of one BACT technology over another? In particular, was a lessor technology selected because of the ability to produce more product for the same level of emissions compared to a less efficient plant? How are the energy efficiency improvements important to the final permit decision? Will the new plant replace an older, existing plant with equal emissions but lower output? How does a new green field plant, albeit more efficient, provide a positive net environmental benefit?

Permit Attachment A provides a general framework for how Holcim should calculate compliance with the annual mass and rate limitations. The table includes entries for a number of key data, but doesn't describe the methodology for calculating compliance with the permit. An example, showing how each calculation is to be made, would be very helpful. This could include the equations that Holcim will use to calculate hourly emissions from the CEMS and then how such hourly data must be averaged into the units of the standard. Depending on the averaging times selected for the BACT emission limitations, the attachment may need further clarification.

The table on page 44 of the fact sheet indicates that Holcim's 31.6 micrograms per cubic meter ($\mu g/m^3$) contribution will exceed the 30 $\mu g/m^3$ PM_{10} 24-hour increments by itself. On page 47, the table indicates that Holcim's increment contribution is only 26 $\mu g/m^3$. We recommend that to avoid any confusion, it would be helpful to add additional clarification that 31.6 $\mu g/m^3$ is the maximum 24-hour concentration, not the high second-highest 24-hour value that determines if the increment is exceeded or not.

[End of Comments]