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

REPLY TO THE ATTENTION OF:

JUL 02 2014

Mr. Ray Pilapil
Bureau of Air
Illinois Environmental Protection Agency
1021 North Grand Avenue East
Springfield, Illinois 62794-9276

Dear Mr. Pilapil:

The U.S. Environmental Protection Agency has reviewed the draft Prevention of Significant Deterioration (PSD) permit No. 08100063 (Draft Permit) proposed by the Illinois Environmental Protection Agency (IEPA) for Mississippi Lime Company, located at 7849 Bluff Road, Prairie du Rocher, Randolph County, Illinois. The Draft Permit is for a lime manufacturing plant that includes two rotary lime kilns with pre-heaters; limestone crushing, storage and handling; fuel storage and handling; lime hydration; lime storage, handling and load-out; and other ancillary operations. The plant will be constructed adjacent to Mississippi Lime's existing limestone mine north of Prairie Du Rocher, Illinois. The project triggers PSD review under 40 C.F.R. § 52.21 for emissions of Sulfur Dioxide (SO_2), Nitrogen Oxides (NOx), Carbon Monoxide (CO), Particulate Matter (PM, PM_{10} and $PM_{2.5}$) and Greenhouse Gases (GHGs).

EPA has the following comments on the Draft Permit:

1. **The permit record does not appear to include any air quality analysis to show that this source will not cause a violation of the ozone National Ambient Air Quality Standards (NAAQS) as required by 40 C.F.R. § 52.21(k) and (m).**

EPA's 8-hour ozone implementation phase 2 rule (70 FR 71612, November 29, 2005) requires that NOx be considered as an ozone precursor under PSD. One of the elements of that rule is a requirement that the PSD program regulations define the term "significant" for ozone to include 40 tons per year (tpy) of NOx. *See* 40 C.F.R. § 52.21(b)(23)(i). In accordance with 40 C.F.R. § 52.21(m)(1)(a), a permit application must contain an air quality analysis for each pollutant that a new source would have the potential to emit in significant amounts. Since the proposed source

has NOx emissions above this significance threshold for ozone, EPA regulations require that the record contain an ozone impact analysis for this source. EPA does not have a specific recommendation at this time on how to conduct a source-specific ozone analysis as the extent of the analysis would be dependent on an evaluation of additional source-specific facts. Types of analyses range from qualitative information to quantitative photochemical modeling of single sources. Given the substantial amount of NOx emissions in this case, a more quantitative analysis may be justified. The IEPA should consult with EPA Region 5 regarding the appropriate form for such an analysis in this case. *See* 40 C.F.R. Part 51, Appendix W, Section 5.2.1.c.

2. The analysis in the record examining the impacts of NOx and SO_2 emissions on secondarily formed $PM_{2.5}$ is inadequate.

EPA's "*Guidance for $PM_{2.5}$ Permit Modeling*" document, dated May 20, 2014, provides information, and specific examples regarding the types of analyses that could be conducted for various emission scenarios. Given the substantial amount of NOx emissions in this case, a more quantitative analysis may be justified. The IEPA should consult with EPA Region 5 regarding an appropriate secondary $PM_{2.5}$ analysis. *See* 40 C.F.R. Part 51, Appendix W, Section 5.2.2.1.c.

3. EPA has several concerns with the GHG Best Available Control Technology (BACT) determination in Condition 2.1.2(b)(iii)(A).

Conditions 2.1.11(a)(i) and (iii) state that the GHG emission limit for the affected kilns in Condition 2.1.2(b)(iii)(A) (2,744 pounds (lbs) of Carbon Dioxide Equivalents (CO_2e) per ton of lime produced by the kiln) "shall be lowered based on actual operation and emissions of the kilns unless the Permittee demonstrates and the IEPA concurs ... that a lower limit cannot be reliably met without unacceptable consequences, i.e., inability to comply with other emission limits or requirements or significant risk to equipment or personnel, and without unreasonable consequences, i.e., a significant increase in maintenance and repair needed for the kilns." Condition 2.1.11(a)(ii) provides that the GHG BACT "shall automatically be lowered" to 2,630 lbs CO_2e per ton of lime if the Permittee fails to conduct the required evaluation or does not complete the evaluation in a timely manner. Pursuant to Condition 2.1.11(b), if the Permittee elects to perform an evaluation for GHG emissions, the evaluation would need to be completed within four years (extendable by an additional two years) after the initial startup of a kiln.[1] Condition 2.1.11(a)(iii) further provides that if the GHG BACT limit must be revised based on the evaluation, the revision would be performed through a permit revision. EPA has several concerns with these provisions:

[1] The Project Summary states that "The duration of the demonstration period would be five years from the date of initial startup of a kiln, with provision for an additional year if needed to effectively set a revised BACT limit for GHG." Project Summary at 66. This statement in the Project Summary is inconsistent with the plain reading of Condition 2.1.11(b).

a. The permit conditions requiring an evaluation period and potentially a permit revision suggest that the IEPA is not convinced that the proposed 2,744 lbs/ton limit represents BACT for the proposed lime kilns. As EPA has previously observed, a BACT re-evaluation is appropriate if it can be determined that errors, faulty data, or incorrect assumptions contained in the original BACT analysis resulted in what may be inappropriate BACT emission levels, and there is no indication that the applicant intentionally acted to misrepresent or conceal data in their original permit application.[2] In this case, the Illinois EPA justifies the evaluation period by pointing to "the dearth of data that is available for the GHG emissions of lime kilns." Project Summary at 66.[3] As a result, the IEPA relied upon generic data for lime manufacturing plants when developing the GHG BACT limit, which resulted in the uncertainty with the proposed BACT limit. However, we note that it appears that the IEPA did not consider GHG BACT limits in permits for lime kilns in other states. We recommend that IEPA review and evaluate other permitting actions to validate that the proposed 2,744 lbs/ton limit represents BACT.

b. Given the IEPA uncertainty with the BACT limit due to insufficient emissions information, we recommend that the evaluation period not be optional. As stated in the Ogden memorandum discussed above, a BACT re-evaluation is necessary if errors, faulty data, or incorrect assumptions contained in the original BACT analysis may have resulted in what may be inappropriate BACT limits.

c. In the Project Summary, the IEPA suggests that it would be "unrealistic" to expect the proposed units to achieve a limit lower than 2,630 lbs/ton (Project Summary at 66) but this suggestion does not appear to be supported by actual emissions data or engineering analysis. The permit should not limit the BACT revision to 2,630 lbs CO_2e/ton if the Permittee does not complete the evaluation in a timely manner, since the results of the evaluation may reveal that a lower emission limit is achievable.

In addition to the above comments, we have enclosed comments on other portions of the permit. We provide these comments to help ensure that the PSD permit meets all federal requirements, and that the record provides adequate support for the permit decision. We look forward to

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[2] *See* Memorandum from Gary McCutchen and Michael Trutna to J. David Sullivan, "Request for Determination on Best Available Control Technology Issues --Ogden Martin Tulsa Municipal Waste Incinerator Facility"; November 19, 1987.

[3] The Project Summary states several reasons why the Illinois EPA could not be able to obtain actual GHG emissions data, including business confidentiality and the fact that the mandatory GHG reporting rule does not require production data.

working with you to address our comments. If you have any questions, please feel free to contact me at (312) 353-4761 or David Ogulei, of my staff, at (312) 353-0987.

Sincerely,

Genevieve Damico
Chief
Air Permits Section

ADDITIONAL EPA COMMENTS ON MISSISSIPPI LIME'S DRAFT PSD PERMIT NO. 08100063

1. **The Draft Permit does not specify how the Permittee will calculate GHG emissions based on the CO_2 CEMS data.**

Condition 2.1.8-1 requires the Permittee to install, calibrate, maintain and operate a Continuous Emissions Monitoring System (CEMS) on each affected kiln for Carbon Dioxide (CO_2) emissions rates. However, the Draft Permit does not specify how the Permittee will calculate GHG emissions based on the CO_2 CEMS data. Because GHG is a mixture of six pollutants, including Methane (CH_4) and Nitrous Oxide (N_2O), the permit must specify how the Permittee will calculate GHG emissions as CO_2e. Condition 2.1.9(g) simply requires the Permittee to maintain records of emissions of GHG (as CO_2e) (tons/month and tons/year) without specifying how the Permittee will calculate those emissions. Options for calculating such emissions include the use of equation C-8 of 40 C.F.R. § 98.33(c)(1), data from source tests or other methodology as specified in the permit, consistent with the emission calculations used in the application.

2. **The PTE of the emergency generators as addressed in Attachment 1 and Condition 1.1(a) of the Draft Permit is incorrect because it does not address emissions during power outages.**

The Project Summary explains that the emissions "during actual power outages" are not addressed because the kilns "*would not be operating during such periods and the overall emissions of the plant during such periods will be far less than when the kilns are in operation.*" Project Summary at 87. However, the PTE for purposes of BACT and air quality analyses must account for the overall permitted operation of the unit. EPA guidance suggests that 500 hours of operation per year may be used to estimate the PTE of an emergency generator unless an alternate enforceable restriction is included in the permit.[4] In the case of the Mississippi Lime permit, there is no practically enforceable restriction on the PTE of the emergency generators.[5] Similarly, the BACT analysis submitted by Mississippi Lime for the emergency generators assumes that each emergency generator will operate for no more than 100 hours per year but does not account for emergency operation.[6] Please ensure that the BACT limits, other emission

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[4] *See* Memorandum from John S. Seitz to EPA Regional Offices, Calculating Potential to Emit (PTE) for Emergency Generators; September 6, 1995.

[5] Condition 1.4-2(a)(iii)(A) limits operation of each engine to no more than 100 hours per calendar year "to confirm availability for emergency operation." Additionally, Attachment 1 to the Draft Permit states: "Limits only address emissions during the operational testing of [the emergency generators] to verify availability in the event of a power outage. Limits do not address emissions during power outages, when the kilns would not be operating."

[6] *See* "BACT Analysis for Emergency Generators," Mississippi Lime Company, August 21, 2013.

limits, and the air quality analyses for the project account for all permitted modes of operation for the emergency generators.

3. **The Draft Permit does not specify how the Permittee will calculate $PM_{2.5}$ (total) emissions.**

The Draft Permit includes emission limits for Particulate Matter $PM_{2.5}$ (total) and PM_{10} (total) but the permit does not specify how $PM_{2.5}$ (total) will be determined. Condition 3.1(b)(i) requires the Permittee to test for PM (filterable), PM_{10} (filterable), $PM_{2.5}$ (filterable) and PM (condensable). In addition, Condition 3.1(b)(ii) specifies that PM_{10} tests shall include measurements of condensable PM. We assume that PM_{10} (total) will be determined as the sum of PM_{10} (filterable) and PM (condensable). However, it is not clear if $PM_{2.5}$ (total) will be determined as $PM_{2.5}$ (filterable) plus PM (condensable) or if a conversion factor will be applied to the PM (condensable) measurement to arrive at an equivalent $PM_{2.5}$ (condensable) value.

4. **The monitoring requirements for $PM_{2.5}$, PM_{10}, sulfuric acid, CH_4, N_2O and metals appear to be inadequate to assure continuous compliance with the emission limits.**

Condition 2.1.7 of the Draft Permit requires the Permittee to conduct initial performance tests on each kiln (within one year) for a number of pollutants including PM, PM_{10}, $PM_{2.5}$, sulfuric acid, CH_4, N_2O and metals. Among other information, the performance tests will be used to develop emission factors for the kiln. *See* Condition 2.1.7(d)(ii). Additionally, Condition 2.1.8-1 of the Draft Permit requires the Permittee to install, calibrate, maintain and operate CEMS on each kiln for SO_2, NOx, CO and CO_2 emissions rates. Additional PM testing is required within five years following the initial PM test and within five years following each subsequent test thereafter. However, the Draft Permit does not require subsequent testing for other pollutants that are not monitored by CEMS including $PM_{2.5}$, PM_{10}, sulfuric acid, CH_4, N_2O and metals emissions. Please add periodic testing requirements for PM, PM_{10}, $PM_{2.5}$ (including condensable PM), sulfuric acid, CH_4, N_2O and metals or explain how the permit conditions will otherwise assure continuous compliance without periodic testing for these pollutants.