

Illinois Environmental Protection Agency  
Bureau of Air, Permit Section  
1021 North Grand Avenue East  
Springfield, Illinois 62794-9276

Project Summary for an  
Application from  
Universal Cement  
To Extend the Construction Permit  
for a Proposed  
Portland Cement Manufacturing Plant  
Chicago, Illinois

Site Identification No.: 031600GVX  
Permit No.: 08120011  
Date Request Received: February 7, 2013

Schedule:

Public Comment Period Begins: March 26, 2013  
Public Comment Period Closes: April 25, 2013

Illinois EPA Contacts:

Permit Analyst: Robert Smet  
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## Introduction

Universal Cement has requested that the air pollution control construction permit for its proposed portland cement manufacturing plant be extended to provide additional time to commence construction. The Illinois EPA has determined that it is appropriate to extend the permit as requested.

The Illinois EPA has prepared a draft of the revised permit that it is proposing to issue that would extend the time to commence construction. Other than providing additional time to commence construction, the draft permit would not make other changes to the conditions of the issued permit. Before issuing a revised permit, the Illinois EPA is holding a comment period to allow the public to comment on this proposed action and the draft of the revised permit.

## Background

On December 20, 2011,<sup>1</sup> Illinois EPA issued a construction permit/PSD approval ("permit") to Universal Cement for the construction of a new portland cement manufacturing plant in Chicago, Illinois.<sup>2</sup> This plant would process limestone, and other materials, into finished cement. The plant, sized to supply the demand of local markets for cement, will have one cement kiln and associated equipment and operations, including equipment for milling and for material handling and storage. As the equipment and operations at the plant will emit air pollutants, the equipment will be subject to state and federal air pollution control requirements. The permit for the plant identifies and specifies the requirements that would apply to the various emission units at the plant.

## Request for Extension of the Permit

The permit provides approval of construction of the proposed plant under the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21. Pursuant to 40 CFR 52.21(r)(2), as addressed in Condition 1.3(a) of the permit, PSD approvals generally expire if construction is not commenced within 18 months of the permit becoming effective. That is, the PSD permit approval will expire if actual construction is not begun or a binding contract for actual construction is not entered into within 18 months. However, this 18-month period may be extended by the permitting authority upon a satisfactory showing that an extension is justified.

Universal Cement has requested an 18-month extension of the PSD "deadline" for commencement of construction. Universal Cement's request describes a number of pre-construction activities that it has undertaken since the permit was issued and a number of additional

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<sup>1</sup> The permit became effective on January 23, 2012, 34 days after it was issued.

<sup>2</sup> The Responsiveness Summary that addresses comments and questions from the public during the public comment period for this permit is available on the internet. Refer to [http://yosemite.epa.gov/r5/in\\_permt.nsf/6f1ebc583aad45448625763f0053e08e/6148c4027e882e7386257b0a00733ea0!OpenDocument](http://yosemite.epa.gov/r5/in_permt.nsf/6f1ebc583aad45448625763f0053e08e/6148c4027e882e7386257b0a00733ea0!OpenDocument).

inter-related preconstruction tasks that must be completed before construction can be commenced. Certain of these tasks have taken longer than anticipated to complete. Most significantly, this is due to the magnitude of the project and the configuration of the property on which the plant would be located. In addition, the engineering firms that handle projects at cement plants have not been as responsive as expected as they have been working on international projects. Completion of these tasks is necessary to finalize the detailed engineering and site plans for the plant that are needed to apply to the City of Chicago for approval of the plant as a "Planned Development" under the city's zoning ordinances. Obtaining this approval from the city, as well as then obtaining a building permit from the city, are pre-requisites for beginning any construction on the plant site. Once the process to apply for approval as a Planned Development is initiated with the City of Chicago, it will take a minimum of six months and possibly much longer, to obtain this approval.

Based on the activities Universal Cement has undertaken to date, Universal Cement's ongoing pre-construction activities, and the nature of the tasks that must still be completed before construction can commence, Illinois EPA finds that the requested 18-month extension is justified. This request for an extension to the permit would be Universal Cement's first such request. Universal Cement certifies that with this extension, the remaining pre-construction activities can be completed and construction can commence within the requested 18-month extension period.

Determinations of Best Available Control Technology (BACT) and Lowest Achievable Emission Rate (LAER).

In conjunction with extension of the permit, the Illinois EPA must also consider whether developments have occurred in emission control technology that could necessitate changes to the permit related to the determinations of Best Available Control Technology (BACT) and Lowest Achievable Emission Rate (LAER). Based on this review, the Illinois EPA finds that updates to the conditions in the permit are not required.

With respect to BACT, the proposed plant is subject to PSD for emissions of nitrogen oxides (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), particulate matter, as PM and PM<sub>10</sub>, and carbon monoxide (CO) because potential emissions of these pollutants will be more than 100 tons per year. The plant is also subject to PSD for emissions of greenhouse gases (GHG) because its potential GHG emissions are more than 100,000 tons of carbon dioxide equivalents (CO<sub>2</sub>e) per year. As a project subject to PSD, the plant's emissions of these pollutants must be controlled with BACT.

With respect to LAER, the proposed plant is also subject to Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203, for emissions of NO<sub>x</sub> and SO<sub>2</sub>. Accordingly, the plant's emissions of these pollutants must be controlled with LAER.

In its request, Universal Cement provided the results of its review of pertinent sources of information on developments in emission control technologies for the cement industry and BACT and LAER determinations

for cement manufacturing facilities, including the USEPA's *RACT/BACT/LAER Clearinghouse*, USEPA Regional permit databases, key state air pollution control agency permit databases, and cement industry developments through various industry contacts. New determinations specifically addressing LAER were not found. This review found that only a handful of BACT determinations for cement manufacturing projects have been either newly permitted or newly listed on state and federal permit databases across the country since the initial permitting of this plant in December 2011. Universal Cement found that none of those projects employ emission control technologies that were not previously considered for the plant or that represent an improvement in emission control.

The draft permit for one of these projects, Titan America at Castle Hayne, North Carolina (Titan), was considered during the processing of the Universal Cement permit. The Titan permit has now been issued. In the issued permit, the North Carolina Department of Environment and Natural Resources added an alternative BACT limit for condensable particulate. The issued Titan permit sets a quantitative limit for condensable particulate, 0.08 pound/ton of clinker, as an alternative to the qualitative limit in the draft permit, 50 percent removal. The alternative limit for condensable particulate was developed from an emission factor in USEPA's *Compilation of Air Pollutant Emission Factors*, AP-42, based on achievement of 50 percent control for condensable particulate by a scrubber system on the kiln. Because the Titan kiln has not yet been constructed, compliance with the new numerical limit has not been confirmed by emission testing. Accordingly, given the basis of that limit and the fact that emissions of condensable particulate from the kiln at the proposed Universal Cement plant will also be controlled with an add-on control system for SO<sub>2</sub> (a circulating fluidized bed absorber), Universal Cement does not consider the alternate Titan limit for condensable particulate to be a sound basis to set updated BACT limits for the kiln at the proposed plant.

Based on the information assembled by Universal Cement, the Illinois EPA has determined that BACT and LAER, as specified in the permit, has not changed for the emission units at the plant. New emission control technologies and control technology improvements have not become commercially available for the equipment at the plant since the permit was issued. The Illinois EPA agrees with Universal Cement's assessment of the additional BACT limit for condensable particulate from the kiln in the issued Titan permit.

#### Air Quality Analysis

In conjunction with extension of the permit, the Illinois EPA must also consider whether the air quality analyses that supported the issuance of the permit, as required under the PSD rules, must be updated. Prior to the issuance of the permit, Universal Cement had air quality impact analyses conducted by a consulting firm, Trinity Consultants, to assess the impact of the plant's emissions of NO<sub>x</sub>, SO<sub>2</sub>, PM<sub>10</sub> and CO relative to applicable National Ambient Air Quality Standards (NAAQS) and PSD Increments. The analyses indicated that the air quality impacts of the plant's SO<sub>2</sub> and CO emissions would not be significant. The plant's impacts on NO<sub>2</sub> air quality, due to its emissions of NO<sub>x</sub>, would also not

be significant on an annual average basis. For PM<sub>10</sub> and NO<sub>2</sub>, on a 24-hour and hourly basis respectively, the modeling indicated that the plant would not significantly contribute to NAAQS exceedances. The analyses for PM<sub>10</sub> also showed that the applicable PSD increments for PM<sub>10</sub> would not be exceeded.<sup>3</sup>

Changes have not occurred in the attainment status of the area in which the plant would be located that would require air quality analyses to be conducted for the plant for additional pollutants under the PSD rules. The Illinois EPA has not received any applications for other proposed major projects in the area, which would potentially impact air quality in the area. With its request for extension of the permit, Universal Cement provided an evaluation of the NO<sub>x</sub> and PM<sub>10</sub> emission inventories for the area focusing on new sources that have been added to the inventories. Universal Cement also evaluated ambient air quality data collected at the Illinois EPA's monitoring stations in the area. These evaluations indicate that, compared to the background conditions addressed by the initial air quality modeling, emissions from existing sources have gone down.<sup>4</sup> Monitored air quality for NO<sub>2</sub> and PM<sub>10</sub> has also improved. Accordingly, new air quality analyses are not needed in conjunction with the extension of the permit since background levels have not increased and the permitted emissions of the plant and its impacts would not increase.

Because a number of communities that pose concerns for environmental justice would be in the vicinity of the plant, an analysis focusing on environmental justice was also performed prior to issuance of the permit. The analysis found that the issuance of the permit would not have disproportionate adverse impacts on residents of those communities. Because increases in air quality impacts would not occur as a result of the extension of the permit, since the permitted emissions and impacts would not increase, the extension of the permit will not alter the conclusions of the original analysis. That is, the proposed plant would still not have disproportionate adverse impacts on the communities located around the plant.

#### Relevant Emission Standards

In conjunction with extension of the permit, the Illinois EPA also considered whether the conditions in the permit must be updated to address changes in applicable emission standards since the permit was issued. As will be discussed below, the Illinois EPA has reviewed changes to relevant emission standards that could necessitate changes to the permit. Based on this review, the Illinois EPA finds that updates to the conditions in the permit are not required.

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<sup>3</sup> After appropriately excluding the air quality impacts of an adjacent industrial facility on its own property, the maximum modeled consumption of the annual PM<sub>10</sub> PSD Increment with the proposed plant was 10.8 µg/m<sup>3</sup>, compared to the applicable annual increment, 17 µg/m<sup>3</sup>. The consumption of the 24-hour PM<sub>10</sub> PSD Increment with the proposed plant was 17.3 µg/m<sup>3</sup>, compared to the applicable increment, 30 µg/m<sup>3</sup>.

<sup>4</sup> Indeed, there have been changes in the area that acts to improve air quality in Chicago, i.e., the permanent closure of the Crawford and Fisk coal-fired power plants in Chicago. In addition, the nearby State Line Power Plant has also been permanently shut down.

The Illinois EPA has considered the changes to relevant emission standards that have occurred since the permit was issued and determined that these changes do not require updates to the permit. In particular, USEPA recently revised the New Source Performance Standards (NSPS) for Portland Cement Plants, 40 CFR 60 Subpart F, and the National Emission Standards for Hazardous Air Pollutants (NESHAP) for the Portland Cement Manufacturing Industry, 40 CFR 63 Subpart LLL.<sup>5</sup> However, USEPA did not set emission standards for any pollutants in the revised rules that are more stringent than the previous standards. Accordingly, changes to the provisions in the permit addressing these rules are not required in conjunction with the requested extension to the permit.

#### Proposed Determination

The Illinois EPA has determined that Universal Cement's request for extension of the permit to provide an additional 18 months to commence construction is justified and complies with applicable requirements for the current permit based on an examination of relevant rules and a review of developments in BACT/LAER for cement plants. The air quality analyses that were conducted to support the permit for the plant continue to appropriately address the proposed plant.

The Illinois EPA is therefore proposing to issue a revised permit for the Universal Cement plant, which extends the "commence construction" deadline in the permit for an additional 18 months.

#### Request for Comments

Comments are requested on this proposed action by the Illinois EPA and the draft of a revised permit.

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<sup>5</sup> USEPA's revisions to these NSPS and NESHAP rules were published in the Federal Register on February 12, 2013 (78 FR 10005).