

**TECHNICAL REVIEW AND EVALUATION  
OF APPLICATION FOR  
MINOR PERMIT REVISION NO. 36425**

**I. INTRODUCTION**

Chemical Lime Company (CLC) operates the Nelson Lime Plant located near Nelson, AZ, which consists of a limestone processing and a lime manufacturing plant. The Nelson Lime Plant operates under Air Quality Class I Permit #1000045. The limestone processing operation consists of an extended quarry area, a crushing and screening plant, and auxiliary operations. The lime manufacturing operation consists of pre-kiln limestone handling, two lime kilns (Kiln 1 and Kiln 2), post-kiln lime handling, a hydrator, two peak demand generators, truck and rail loadout facilities, and solid fuel handling.

In accordance with R18-2-319 of the Arizona Administrative Code (AAC), CLC submitted a permit application on May 19, 2005, for a minor revision to replace the existing gravel bed filter with a new baghouse to control particulate matter emissions from Kiln #1. On December 6, 2005, ADEQ received an amendment to the original minor revision application which constituted a design change to the dust loadout process and modified the baghouse controls for the dust loadout process by using an existing dust collector in lieu of installing a new dust collector.

**A. Company Information**

Facility Name: Chemical Lime Company, Nelson Lime Plant

Mailing Address: P.O. Box 370  
Peach Springs, AZ 86434

Facility Location: 2.5 miles south of US Route 66, mile marker 112  
Nelson, Yavapai County, 86434

**B. Attainment Classification (Source: 40 CFR §81.303)**

Chemical Lime Company, Nelson Lime Plant is located in an area which is in attainment for all criteria pollutants.

**II. DESCRIPTION OF CHANGE**

Particulate Matter (PM) emissions from Kiln #1 were controlled with a multi-tube cyclone dust collector and a Rexnord 10 module gravel bed filter. Emissions were vented through a single stack. Dust collected by the multi-tube cyclone dust collector and gravel bed filter was transferred via screw conveyors and a bucket elevator to Dust Bin 1-318.

The proposed change will result in the removal or decommissioning of all equipment associated with the Rexnord gravel bed filter, including the I.D. fan, backflush fans, hydraulic pumps, dust screw conveyors and stack, and replacement of this equipment with a BoldEco Model FBCL-14-2-18-16-10 Pulse Jet, Negative Pressure Baghouse, new I.D. fan, and new stack. The dust screw conveyor system will also be modified by removing screw conveyors 1-313-A1, 1-313-A2, 1-313-A3, and 1-313-B, and installing new screw conveyors 1-316-B, and 1-316-C. Additionally, a baghouse-controlled loadout spout just below Dust Bin 1-318 will be installed to allow direct loading of the haul trucks and supper stacks. This permitting action will also update the opacity standards for equipment subject to A.A.C. R18-2-702.

### III. EMISSIONS

The facility is classified as a Major Source pursuant to Arizona Administration Code (A.A.C.) R18-2-101.64. The potential emission rate of PM and PM<sub>10</sub>, will be reduced significantly through the installation of the baghouse as shown in Tables 1. The original configuration consisted of a gravel bed filter and the new configuration consists of a baghouse. This project will reduce PM and PM<sub>10</sub> potential to emit 158.67 tons per year and 77.61 tons per year, respectively.

Table 1: Potential to Emit

**Kiln #1 with Gravel Bed Filter**

	Capacity	Capacity	Emissions Factor		
	(tons/hr)	(tons/yr)	(lb/ton)	(lb/hr)	(ton/yr)
PM*	39.375	344925	1.2	47.25	206.96
PM <sub>10</sub>	39.375	344925	0.6	23.625	103.48

\* Emission factor is from Coal Fired Rotary pre-heater kiln with gravel bed filter

**Kiln #1 with Baghouse**

	Capacity	Capacity	Emission Factor		
	(tons/hr)		(lb/ton)	(lb/hr)	(ton/yr)
PM*	39.375	344925	0.28	11.025	48.29
PM <sub>10</sub>	39.375	344925	0.15	5.90625	25.87

\* Emission factor is for Coal Fired Rotary Kiln with Fabric Filter

### IV. APPLICABLE REGULATIONS

The Permittee has identified the applicable regulations that apply to each unit in its permit application. Table 6 below summarizes the findings of the Department with respect to the regulations that are applicable to each emissions unit. Previous permit conditions are discussed under Section VI of this technical review document.

Table 2: Applicable Regulations

Unit ID	Applicable Regulations	Verification
Limestone Crushing and Screening Plant	<i>Arizona Administrative Code R18-2-702.B.3</i>	These conditions require that the permittee meet the 20 percent opacity limit at the Limestone Crushing and Screening Plant.
Limestone Kiln Feeding System	<i>Arizona Administrative Code R18-2-702.B.3</i>	These conditions require that the permittee meet the 20 percent opacity limit at the Limestone Kiln Feeding System.
Solid Fuel Handling System	<i>Arizona Administrative Code R18-2-702.B.3</i>	These conditions require that the permittee meet the 20 percent opacity limit at the Solid Fuel Handling System.

Unit ID	Applicable Regulations	Verification
Kiln 1 System/Kiln 2 System	<u>Arizona Administrative Code</u> R18-2-702.B.3  R18-2-306(A)(2)	<p>These conditions require that the permittee meet the 20 percent opacity limit at Kiln 1 and Kiln 2</p> <p>The permit requires that CLC build the new stack to a height of 140 feet as stated in the application.</p> <p>The conditions that applied to the gravel bed filter based on the Consent Order have now been adjusted to include the Kiln 1 Baghouse.</p>
Dust Bins	<u>Arizona Administrative Code</u> R18-2-702.B.3	<p>These condition requires that the permittee meet the 20 percent opacity limit at the Dust Bins.</p>
Front and Back Lime Handling Systems	<u>Arizona Administrative Code</u> R18-2-702.B.3	<p>These conditions require that the permittee meet the 20 percent opacity limit at the Front and Back Lime Handling Systems.</p>
Hydrator	<u>Arizona Administrative Code</u> R18-2-702.B.3	<p>These conditions require that the permittee meet the 20 percent opacity limit at the Solid Fuel Handling System.</p>
Drop points and conveyors	<u>Arizona Administrative Code</u> R18-2-702.B.3	<p>These conditions require that the permittee meet the 20 percent opacity limit at the Solid Fuel Handling System</p>



Chemical Lime Nelson  
 Permit #1000045  
 Permit Engineer - MBh  
 10-Feb-06

Process Rate Kiln 1 945 tons/day  
 Process Rate Kiln 2 1415 tons/day  
 2360

**Kiln #1 with Gravel Bed Filter**

	Capacity (tons/hr)	Capacity (tons/yr)	Emissions Factor (lb/ton)	(lb/hr)	(ton/yr)
PM*	39.375	344925	1.2	47.25	206.96
PM <sub>10</sub>	39.375	344925	0.6	23.625	103.48

\* Emission factor is from Coal Fired Rotary pre-heater kiln with gravel bed filter, which is different than application

**Kiln #1 with Baghouse**

	Capacity (tons/hr)	Capacity (tons/yr)	Emission Factor (lb/ton)	(lb/hr)	(ton/yr)
PM*	39.375	344925	0.28	11.025	48.29
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