**Environmental management**

Number of Category 3 and 4 Environmental Incidents

<table>
<thead>
<tr>
<th>Year</th>
<th>Category 3</th>
<th>Category 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>2011</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>

**Community engagement**

All of the BLA members’ production sites operate in an ISO 14001 certified Environmental Management System (EMS). The sector is also regulated by the Environment Agency, who issue permits for each lime production. The permits ensure any environmental impacts from lime production are monitored, in accordance with the Environment Agency’s Compliance Classification Scheme. This is done through classification of any voluntary or mandatory incidents that occur and records of consultations with the public. In 2011 there were no category 1 & 2 incidents, two category 3 & four category 4 incidents. The result is a 60% decrease in environmental incidents since 2005. Notably, there were no formal carryover, enforcement notices or environmental prosecutions in 2011.

**LIME PLANTS**

Lime can be used to:

- Purify sugar
- Produce toothpaste
- Make an additive for engine oil
- Control water get in fish farming
- Produce chicken feed
- Make tap water safe to drink

**Waste minimisation**

Total waste disposed to landfill per tonne lime manufactured

<table>
<thead>
<tr>
<th>Year</th>
<th>Waste (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>39%</td>
</tr>
<tr>
<td>2011</td>
<td>20%</td>
</tr>
</tbody>
</table>

NOTES

1. Small-scale production line (SML). A small-scale production line is defined as a “non-compliance which would have the potential to have an environmental impact”.
2. Environment Agency’s Compliance Classification Scheme 2011.

**Key Facts and Figures for 2011**

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<tr>
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<th>Number of Category 3 Incidents</th>
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<tr>
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</tr>
</tbody>
</table>

**Notes**

- LIME PLANTS is a part of the Mineral Products Association, the trade association for the aggregates, asphalt, concrete, mineral products, slate, stone, sand and gravel sectors.
- © Mineral Products Association 2012

**Figure for 2011**

- British Lime Association
- Buxton Lime and Cement
- Specialty Minerals
- Tata Steel
- Lhoist UK
- Manchester & District Ltd
- Termex Buxton Lime and Cement
- Bla@mineralproducts.org  www.britishlime.org
- tel +44 (0)20 7963 8000  Fax +44 (0)20 7963 8001
- London SW1V 1HU
- 120 members
- 13 local councils
- 45 production sites
- 416 employees
- 235 products
- 155 employees
- 43 farming operations
- 36 liability contracts
- 70 material as part of a quarry restoration
- 20 recycling of waste material for alternative uses.
- Mineral waste may be used as a backfill additive for road construction.
- 39% of material is recycled for alternative uses.
- 39% of material is used as a backfill additive for road construction.
- 39% of material is recycled for alternative uses.

**Mineral Products Association**
## Highlights (2005-2013 comparison)

### Lime products
- Total CO₂ emissions per tonne of high calcium lime manufactured reduced by 11%.
- Total CO₂ emissions per tonne of dolomite manufactured reduced by 8%.
- NOx emissions per tonne of high calcium lime manufactured reduced by 12%.
- SO₂ emissions per tonne of high calcium lime manufactured reduced by 35%.
- Dust emissions per tonne of dolomite manufactured reduced by 6%.

### Paint point source dust emissions per tonne of high calcium lime manufactured reduced by 14%.

### Point source dust emissions per tonne of dolomite manufactured reduced by 94% per tonne of lime manufactured.

### Dolomite
- Sulfur dioxide emissions to air per tonne of high calcium lime manufactured reduced by 11%.
- NOx emissions to air per tonne of dolomite manufactured reduced by 15%.
- CO₂ emissions to air per tonne of dolomite manufactured reduced by 94% per tonne of lime manufactured.

### Paper
- 

## CO₂ emissions

### High calcium lime

<table>
<thead>
<tr>
<th>Year</th>
<th>Limestone</th>
<th>Dolomite</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>1200</td>
<td>600</td>
</tr>
<tr>
<td>2011</td>
<td>1500</td>
<td>200</td>
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</tbody>
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### Dolomite

<table>
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<tr>
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<tbody>
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### Sulphur dioxide (SO₂) emissions

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### Point source dust emissions

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## The Lime Cycle

Lime products provide a key ingredient for many essential processes, such as sugar purification processes or to produce quicklime, a chemical reagent used in the sugar purification process. The lime cycle is a closed system, containing carbon dioxide chemically fixed in the production of lime. Thereafter, the lime cycle is continued by the reduction in UK construction usage of alternative fuels in the production of lime, including emissions from burning fuels. There is also a large reduction in CO₂ emissions since 2005. This decrease reflects the longer-term commitment to reduce CO₂ emissions from the lime cycle.

## High Calcium Lime

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## Point source dust emissions

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Since 2005, point source dust emissions per tonne of high calcium lime manufactured have decreased by 9%. This encouraging trend is expected to continue, given the longer-term commitment of the UK’s lime industry to reduce its environmental impacts.
The Lime Cycle

When limestone (calcium carbonate) is heated in a kiln, it breaks down into lime (calcium oxide, CaO) and carbon dioxide (CO₂). The lime is then used to manufacture high calcium lime (calcium oxide plus small amounts of calcium hydroxide). The kiln is heated to high temperatures inside a kiln, a chemical reaction occurs, and lime is manufactured at an industrial scale. Dolomite, which is a more stable form of calcium carbonate (calcium magnesium carbonate, CaMg(CO₃)₂), is used mainly for agricultural and industrial purposes. High calcium lime is used in various applications, including construction, agriculture, and environmental control.

CO₂ mitigation

The CO₂ mitigation section discusses the measures taken to reduce CO₂ emissions from lime production. It highlights the importance of reducing CO₂ emissions to combat climate change. The section outlines various initiatives and technologies that have been implemented to reduce CO₂ emissions from lime production.

The UK lime industry in 2011

The UK lime industry has seen significant changes since 2005. The industry has undergone a period of growth and consolidation. The number of lime manufacturing plants has decreased, and the remaining plants have increased their production capacity. The industry has also seen changes in the types of lime produced and the markets served. The section provides an overview of the lime industry in 2011, including production capacity, market trends, and environmental performance.

High calcium lime

High calcium lime is produced as a byproduct of the cement manufacturing process. The lime is then used in various applications, including construction, agriculture, and environmental control. The section provides an overview of high calcium lime production and its applications.

CO₂ emissions

CO₂ emissions from high calcium lime production have decreased significantly since 2005. The reduction in CO₂ emissions is attributed to various factors, including process improvements, increased energy efficiency, and changes in production methods. The section provides data on CO₂ emissions from high calcium lime production and its implications for climate change.

High calcium lime emissions

High calcium lime production emits CO₂, which is a greenhouse gas. The emissions are attributed to the energy consumed during the lime production process. The section provides data on CO₂ emissions from high calcium lime production and their contribution to global greenhouse gas emissions.
The Lime Cycle

When limestone (calcium carbonate) is calcined in a lime kiln, it produces high temperatures to make calcium oxide. This reaction is exothermic and releases CO₂, which is captured and used as a raw material in the limestone industry. The resulting high calcium lime is then used in a variety of applications, including building materials, agriculture, and industrial processes.

CO₂ Emissions

- Lime production is estimated to result in an overall CO₂ emissions of approximately 4 kg CO₂/tonne of lime produced.
- Approximately 2 kg CO₂/tonne of lime is emitted during dolomite production.
- Combustion of CO₂ per tonne of high calcium lime manufactured at standard purity is estimated to be 0.15 kg CO₂/tonne.
- Combustion CO₂ emissions per tonne of high calcium lime manufactured at standard purity are estimated to be 0.06 kg CO₂/tonne.
- Combustion CO₂ emissions per tonne of high calcium lime manufactured at standard purity are estimated to be 0.08 kg CO₂/tonne.
- Combustion CO₂ emissions per tonne of high calcium lime manufactured at standard purity are estimated to be 0.1 kg CO₂/tonne.

Dolomite

- Dolomite is produced from burning calcium carbonate to temperatures of up to 1400ºC in a lime kiln. Dolomite is a mixture of calcium carbonate (CaCO₃) and magnesium carbonate (MgCO₃) and is used in various applications, including iron and steel production, agricultural fertilizers, and marine drilling mud.
- Dolomite production is estimated to result in an overall CO₂ emissions of approximately 6 kg CO₂/tonne of dolomite produced.
- Approximately 3 kg CO₂/tonne of dolomite is emitted during dolomite production.
- Combustion of CO₂ per tonne of high calcium lime manufactured at standard purity is estimated to be 0.25 kg CO₂/tonne.
- Combustion CO₂ emissions per tonne of high calcium lime manufactured at standard purity are estimated to be 0.33 kg CO₂/tonne.
- Combustion CO₂ emissions per tonne of high calcium lime manufactured at standard purity are estimated to be 0.41 kg CO₂/tonne.
- Combustion CO₂ emissions per tonne of high calcium lime manufactured at standard purity are estimated to be 0.48 kg CO₂/tonne.

High calcium lime

- High calcium lime production is estimated to result in an overall CO₂ emissions of approximately 4 kg CO₂/tonne of lime produced.
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LIME PLANTS
BLA members

Purify sugar
Produce toothpaste
Make an additive for engine oil
Control water gel in fish farming
Produce chicken feed
Make tap water safe to drink
Keep fruit fresh
Clean gasses produced by Emerge from Waste plants
NOTES
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2. Environmental Agency’s Complete Classification Scheme (CCS): Category 1 includes defined as “no environmental impact associated with the potential for a major environmental impact”. Category 2 includes defined as “no environmental impact associated with the potential for a major environmental impact”. Category 3 includes defined as “no environmental impact associated with the potential for a major environmental impact”. Category 4 includes defined as “potential for a major environmental impact”.

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Drinking water produced from water safe to drink

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Figure 1: Number of Category 3 and 4 Environmental Incidents

Community engagement
Figure 2: BLA member environmental activity to their production sites in 2011. There were also 16 community liaison meetings attended by both operators and the Environment Agency.

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