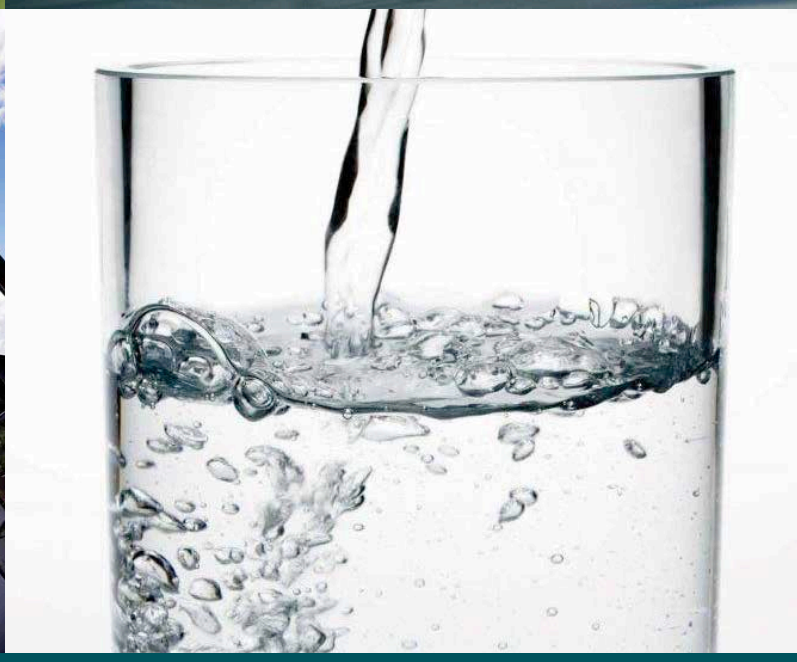
mpa
essential materials
sustainable solutions



British Lime Association

Sustainable Development Report 2012

bla british lime association

Mineral Products Association

FOREWORD

This is the third annual report from the British Lime Association (BLA) and illustrates the encouraging progress our sector has made in key sustainability indicators since last year.

We are delighted to report that between 2011 and 2012, there have been further reductions in emissions to air and environmental incidents and an increase in alternative fuel usage in dolomite production. We have also begun recording our water use and, as an industry, will be developing our focus on water further as we progress our knowledge and understanding of how we use this important resource.

During 2012, the lime industry was fully integrated into the Environment Agency's *Cement, Lime and Minerals Sector Plan*. The plan uses 2011 as the baseline year for setting industry specific targets. We hope this will prove to be a valuable tool to illustrate our commitment to best practice, efficient production and compliance with environmental legislation.

We know how important lime is to everyday products and processes that we all rely on. Lime helps us to purify drinking water, manufacture sugar, clean waste gases and produce steel and supports both the UK manufacturing and construction industries. It is essential that lime producers continue to provide a secure supply of lime to the UK sectors that need it, as they have done since the Roman times. As an historical, local industry we are committed to developing more sustainable practices and also helping to nurture our natural environment and provide employment opportunities for local people along the way.

John Carlill
Steetley Dolomite Ltd

David Patigny
Lhoist UK

Viv Russell
Lafarge Tarmac

Richard Stansfield
Singleton Birch Ltd

Robert Brown
Specialty Minerals

Alastair Dunn
TATA Steel

Richard Pike
British Sugar plc

Chris Queen
TATA Steel

HOW WE MAKE LIME

There are two types of lime made in the UK; high calcium lime and dolomite. High calcium lime is produced from burning limestone or chalk, which is calcium carbonate ($CaCO_3$), at temperatures of up to 1400ºC in either a vertical kiln or horizontal rotary kiln.

Dolomite is produced from burning dolomitic limestone, which consists of $CaCO_3$ and magnesia (magnesium oxide, MgO) at temperatures of around 2000ºC in a horizontal rotary kiln.

Due to the significant variation in the manufacturing processes required for the two types of lime, the majority of the data in this report has been separated, to ensure an accurate reflection of the industry is presented.

THE UK LIME INDUSTRY IN 2012

UK lime production remained fairly stable between 2011 and 2012, with 1.7 million tonnes of lime produced in 2012 compared to 1.6 million tonnes in 2011. Sales remain consistently lower than before 2008, when the effects of the economic downturn hit the industry significantly. The sector as a whole is eager for growth in the near future.

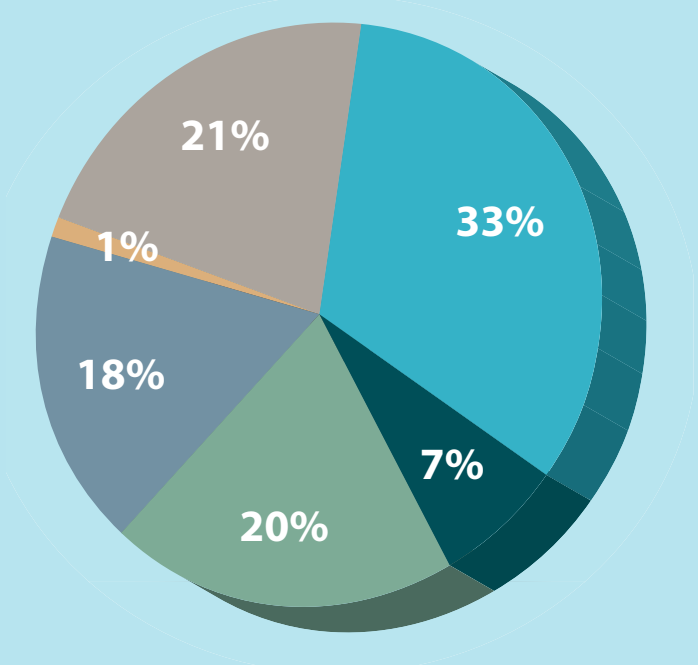
SUPPLYING VITAL INDUSTRIES

Lime supplies a vast range of crucial industries, which provide us all with materials for everyday life. Industries as diverse as steel, sugar, drinking water and waste treatment all use lime as an important ingredient.

In 2012, the lime industry sold 33% of its products to the iron and steel industry, 20% for building and construction and 18% for environmental protection. 21% of products were exported to other countries whilst smaller proportions were used for chemicals and agriculture.

The BLA has now published a document which highlights the importance of lime as an unseen ingredient for vital, UK-based industries. It also illustrates the industry's fragility when faced with mounting cost pressures, loss of market and the threat of carbon leakage.

The publication can be accessed at www.britishlime.org.



2012 BLA Market Sales (BLA Members only)

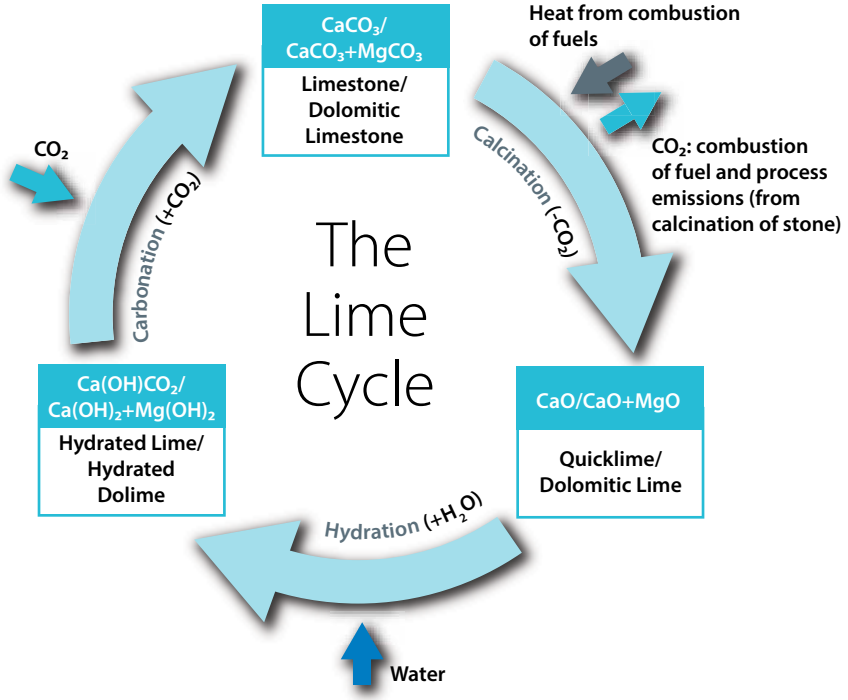
- Iron and steel
- Chemicals and chemical processes
- Building and construction
- Environmental protection (including drinking water purification)
- Agriculture
- Export

CO_2 EMISSIONS

The Lime Cycle

When limestone, chalk ($CaCO_3$) or dolomitic limestone ($CaCO_3$, $MgCO_3$) rock is heated to high temperatures inside a kiln, a chemical reaction is triggered which releases carbon dioxide (CO_2) from the rock. This reaction is a natural process and is unavoidable. The released CO_2 is called 'Process CO_2 emissions' and makes up around 75% of the CO_2 generated from high calcium lime production and 53% from dolomite production.

Over its lifetime, lime reabsorbs CO_2 from the air around it. This natural process is known as carbonation and forms the last link in the lime cycle.

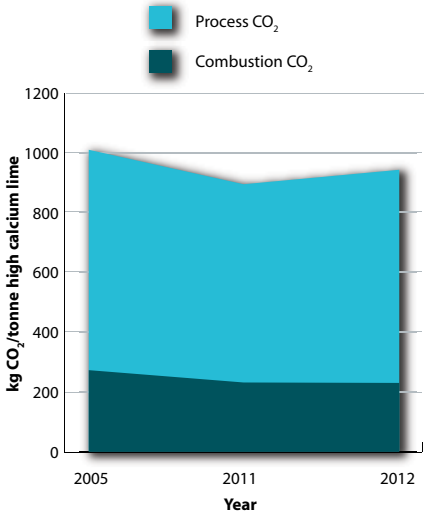


High calcium lime

Since 2011, combustion CO_2 emissions per tonne of high calcium lime have reduced by 1%. Process emissions have increased by 7%. This is due to changes in the source of some of the raw material used in 2012, which has led to a slight variation in the carbon content of the feedstone. The result is an overall increase since 2011 in total CO_2 emissions of 5%.

In comparison to 2005 data, which was presented in our first report, there have been positive results in reducing combustion CO_2, which has decreased by 16% per tonne of product.

CO_2 emissions per tonne of standard purity high calcium lime 2005-2012 (kg/tonne)



CO_2 mitigation

CO_2 emissions are generated from the combustion of fuel used to power the production of lime. Where technically feasible, BLA members use alternative fuels to power lime production.

However, the industry is limited by the fuel types that can be technically used. This is because only the cleanest, highest quality fuels can meet the high specification requirements for lime products that are used in pharmaceuticals and drinking water purification.

Of course, CO_2 reduction remains a high priority. All BLA members are part of a UK Climate Change Agreement and the EU Emissions Trading Scheme, which encourages both reduced energy consumption and CO_2 emissions.

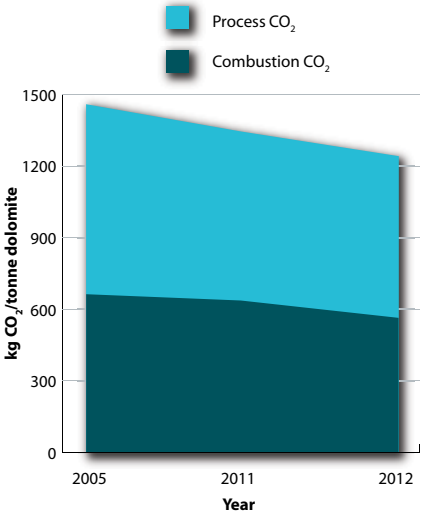
Dolomite

There has been a 12% decrease in combustion CO_2 emissions per tonne of dolomite produced between 2011 and 2012. This is due to the increased combustion efficiency of fuels and the rise in the use of alternative fuels.

Process CO_2 emissions from dolomite production have also reduced, due to the utilisation of waste dust to manufacture products. This results in lower emission figures per tonne of product. Overall, total CO_2 emissions have reduced by 8% since 2011.

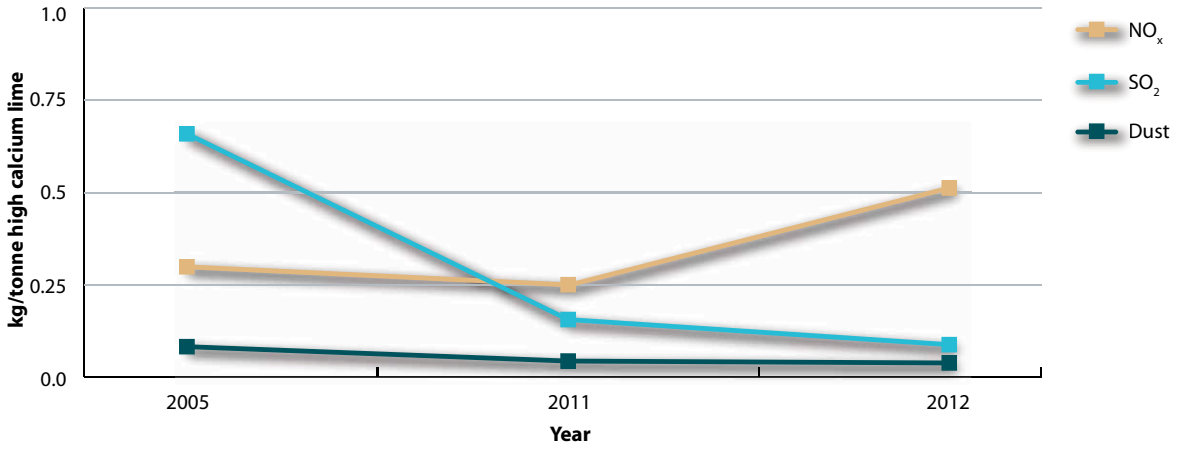
Since 2005, dolomite production has reduced combustion CO_2 emissions by 15%, which is highly encouraging.

CO_2 emissions per tonne of dolomite 2005-2012 (kg/tonne)



EMISSIONS TO AIR (excluding CO_2)

High calcium lime



Oxides of Nitrogen (NO_x) Emissions

The rise in No_x emissions per tonne of high calcium lime has been noticeable since 2011. This increase is due to a specific change in the mix of kiln types which operated in 2012. This occurred due to significant variations in market demand for different types of lime product and this has been reflected in the emissions data. Importantly, site emissions remain below permitted limits for lime plants, as regulated by the Environment Agency.

Sulphur Dioxide (SO_2) Emissions

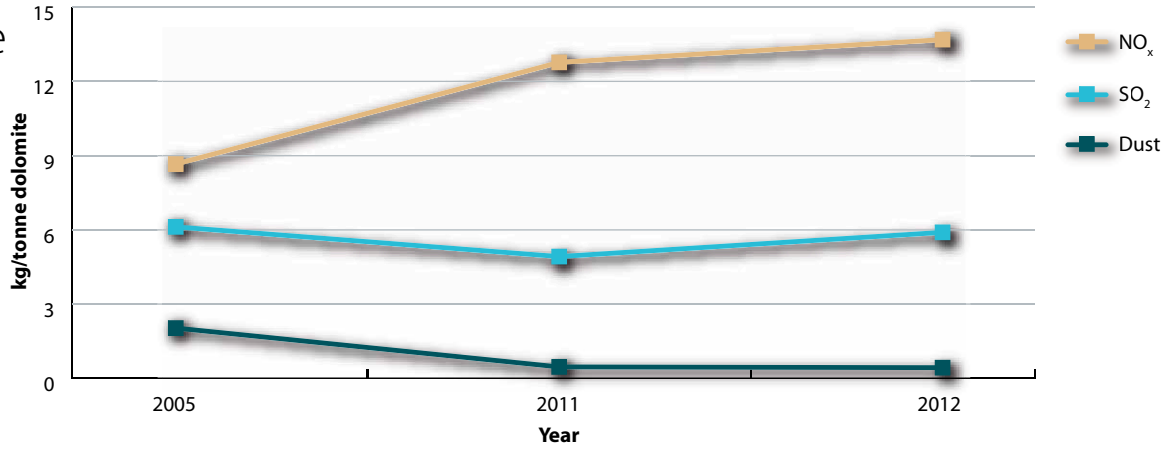
There has been a further significant decrease in SO_2 emissions since 2011. The 50% reduction per tonne of high calcium lime reflects the high commitment from the industry to reduce emissions where at all possible.

From 2005, high calcium lime producers have actually reduced their SO_2 emissions by 89%, which is a very positive change for the industry.

Point Source Dust Emissions

Point source dust emissions have reduced by 33% between 2011 and 2012. This has been caused by focussed investment in 2012 in dust abatement equipment and shows that the actions taken by the industry have produced successful collective results.

Dolomite



Oxides of Nitrogen (NO_x) Emissions

NO_x emissions have risen between 2011 and 2012 due to further increases in the production of sintered dolomite products. Sintered dolomite requires much higher temperatures and two passes through the kiln to produce a very dense end product. These are the characteristics that are essential for products to be used as refractory materials, of which there is growing demand at present.

Sulphur Dioxide (SO_2) Emissions

SO_2 emissions have increased by 20% since 2011 due to variations in fuel mix used to drive the production of dolomite. The equipment used for dolomite production is currently in a transitional phase and reducing these emissions will be a key objective for the dolomite sector from 2013 and beyond.

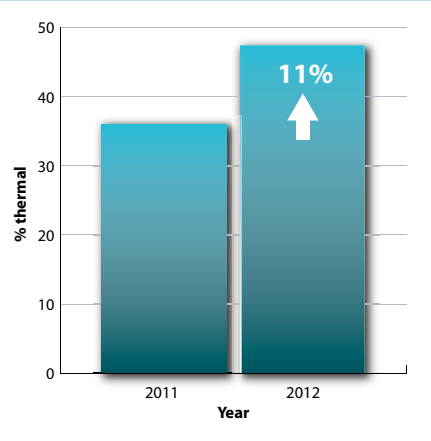
Point Source Dust Emissions

There was a 6% reduction in point source dust emissions per tonne of dolomite manufactured since 2011. Improvements to electrostatic precipitators and better screening of the incoming feed stone have produced positive results. Overall, this is very encouraging, especially following the 77% reduction between 2005 and 2011.

ENVIRONMENTAL IMPROVEMENTS

Using alternative fuels

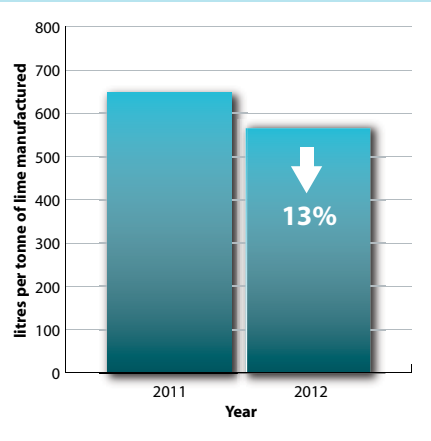
Waste derived fuel use as a percentage of total fuel-dolomite manufacture only (% thermal)



The use of waste derived fuels (WDFs) in dolomite production has increased from 36% of total fuel use in 2011 to 47% in 2012. This is extremely positive for the industry and the aim is to increase the use of WDFs year on year, as an alternative to fossil fuels.

Water resource efficiency

Total water use (potable and abstracted)



Using natural resources efficiently is imperative to BLA members. There has been a 13% drop in total water use (potable and abstracted water) since 2011.

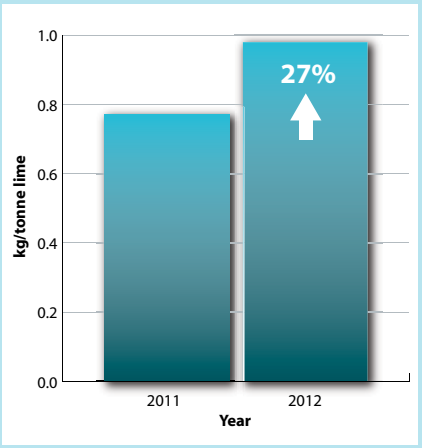
This has been achieved by using more accurate measuring techniques and encouraging efficient use of water for things like dust suppression and washing of raw materials.

Community engagement

The lime industry opened their plant to 331 visitors in 2012. Plant operators also attended 18 local community liaison meetings, in collaboration with the Environment Agency. These meetings are beneficial to lime producers as they have the opportunity to engage with local stakeholders, residents and regulators and maintain their relationship with surrounding communities.

Waste minimisation

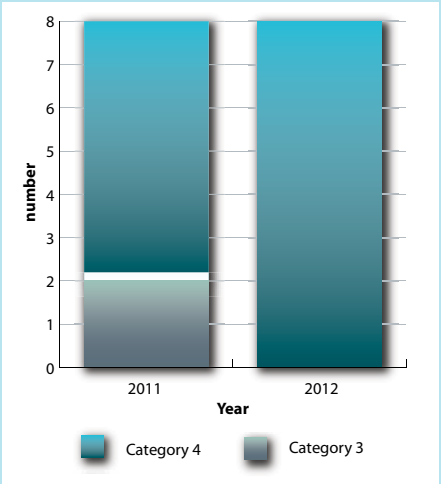
Total waste disposed to landfill per tonne lime manufactured



The increase of 27% was the result of waste material that had previously been recovered being sent to a landfill facility, whilst the operation that utilised the waste was temporarily shut down. It is anticipated that this figure will reduce in 2013.

Environmental management

Number of Category 3 and 4 Environmental Incidents



In 2012 there were no enforcement notices, formal cautions or prosecutions. Even though the number of environmental incidents has remained the same as 2011, the Category 3 incidents have reduced to zero, and there were also no Category 1 or 2 incidents[2]. This means that all incidents that did occur in 2012 were deemed to be "a non-compliance which has no potential to have an environmental impact"[2], as defined by the Environment Agency.

make the link
to mineral products

LIME PLANTS

BLA members

Factory/Site Owner	Location	
Lhoist UK	Buxton	1
Singleton Birch	Melton Ross	2
	Batts Combe	3
Steetley Dolomite Limited	Thrislington	4
	Whitwell	5
LAFARGE TARMAC	Tunstead	6
	Hindlow	7

BLA associate members

Factory/Site Owner	Location	
Specialty Minerals	Birmingham	8
TATA STEEL	Shapfell	9
BRITISH SUGAR	Norwich	10
	Norfolk	11
	Notts	12
	Suffolk	13

NOTES

1 Standard purity stated for lime (94.5%) is sourced from the EU Commission Decision of 27 April 2011 "determining transitional Union-wide rules for harmonised free allocation of emission allowances pursuant to Article 10a of Directive 2003/87/EC of the European Parliament and of the Council", Page 37 Available: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:130:0001:0045:EN:PDF

2 Environment Agency's Compliance Classification Scheme (CCS):

Category 1 incident defined as "a non-compliance which would have the potential to have a major environmental impact".

Category 2 incident defined as "a non-compliance which would have the potential to have a significant environmental impact".

Category 3 incident defined as "a non-compliance which would have the potential to have a minor environmental impact".

Category 4 incident defined as "a non-compliance which has no potential to have an environmental impact".

Available: http://www.environment-agency.gov.uk/business/regulation/31825.aspxttp:/www.environment-a/

BLA is part of the Mineral Products Association, the trade association for the aggregates, asphalt, cement, concrete, dimension stone, lime, mortar and silica sand industries.

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