

**BRITISH
PRECAST**

2012 Health & Safety
Awards



(Sponsored by Lafarge Cement UK)

Theme: Physical Safety, Behavioural Safety or Occupational Health

Entrant Company:	Aggregate Industries – Concrete Products
Entrant Contact Name:	Ian Sherratt – Site Manager
Site Name:	Leighton Buzzard
Project Name:	Occupational dust reduction
Address:	Charcon Leighton Buzzard Grovebury Road Leighton Buzzard LU7 4RU
Tel:	01525 382576
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Email:	Ian.sherratt@aggregate.com
Senior Manager Signature:	<i>P. A. [Signature]</i>
Date:	15/3/12

One Entry Form for each distinct Entry

Entry Form and supporting documents e.g. e-documents, with High Resolution Images where used, to arrive at British Precast **no later than Friday, 16th March 2012.**

We thank Lafarge Cement UK for their continuing support

The Awards Team
British Precast
60 Charles Street
Leicester
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Email: abdullahi.aliyu@britishprecast.org
Fax: 0116 251 4568

Checklist:

- 1. Completed Entry Form, including Senior Site Manager's signature**
- 2. Entry, including;**
- 3. Description of the problem**
- 4. Recommendations/actions**
- 5. Evidence**
- 6. Cost/benefit statement**
- 7. Steps taken to maintain improvement**
- 8. Pre and post risk assessments**
- 9. High Resolution photographs and/or video**
- 10. Summary, structured into Task, Problem, Solution & Result**
- 11. Submission of hard copy and e-documents of entry in MS word, pdf format, on a CD or through email.**

Occupational Health - Resume

Leighton Buzzard site - Rumbler

- **Task**

To reduce the level of respirable dust within the Rumbler working environment.

- **Problem**

The COSHH Regulations came into force fully on the 1st January 1990, and require Companies to implement a testing programme to monitor the concentration of airborne dusts in the workplace and ensure that action is taken to control the exposure of employed persons to within the limits set by the regulations.

The current recommended limits assigned to airborne dust are given as Workplace Exposure Limits (WELs) and published in EH40/2005 'Workplace exposure limits: Containing the list of workplace exposure limits for use with the control of Substances Hazardous to Health Regulations 2002 (as amended), Health and Safety Executive', which is revised yearly and at present states the following limits to be achieved:

- Total inhalable nuisance dust - 10.0 mg/m³ (WEL)
- Total respirable nuisance dust - 4.0 mg/m³ (WEL)
- Respirable crystalline silica - 0.1 mg/m³ (WEL)*

*Note: the respirable crystalline silica limits up to October 2006 was 0.3 mg/m³ (WEL)

The Holcim internal standard for Respirable Silica Dust is 0.05 mg/m³. To achieve the limit of 0.3 mg/m³ was reasonably straightforward. However, it was difficult to achieve the limit of 0.1 mg/m³, the target of 0.05 mg/m³ was looking to be challenging.

- **Solution**

Through discussions with Rumbler crew, Production Supervisor and in house safety adviser, a plan was put together to find a simple, low cost solution that would be easy to maintain.

- **Result**

Occupational dust monitoring survey carried out in February 2012 showed that respirable dust concentrations (mg/m³ 8hr TWA) had fallen to an average of 0.027 mg/m³ during the production operation in the Rumbler.

- **The Problem**

The rumbling operation is a secondary process whereby concrete block paving is fed into a horizontal rotating drum. The rotation of the drum causes the blocks to tumble over one another thus chipping the edges and the surfaces of the product to give an 'antiqued' finish to the product.

The process of 'rumbling' generates a significant amount of dust, much of which is removed by the use of four large dust extraction units. However, there was an amount that still entered into the atmosphere.

Various suppliers of dust extraction equipment were called in to provide a solution. In 2010, £2.2k was spent on improving the routing of the dust extraction ducting. However, results showed only a minimal reduction in respirable crystalline silica dust levels.

Other quotes were obtained (all in excess of £10k excluding a dust extraction unit). In all cases, the suppliers were not prepared to offer a guaranteed result - A different approach was needed.

- **Solution**

A team consisting of the Rumbler crew, Production Supervisor, AI Safety Advisor, and Site manager looked at all aspects of the plant where dust was being generated and could be transferred into the working area. An action plan was drawn up with an emphasis on simple cost effective solutions.

Actions included:

Toolbox talk with the crews regarding the dangers of dust inhalation.

Preventing dust from entering the working enclosure in the first place:

- The sealing of all areas in the dividing wall between the Rumbler drum and the sorting stations using expanding foam, physical barriers made using plywood and sealing strips and repositioning of the existing extraction ducts.

Before action taken:



Wall separating Rumbler drum and working area. There were multiple points where dust was able to enter the working area

After action taken:



Holes in wall sealed off using expanding foam and bricks

Before action taken:

Dust entry point into working area



After action taken:



Wooden covers with rubber seals used to prevent dust transferring into working area

Before action taken:



Exit from Rumbler drum open – extraction unit unable to draw dust away thus allowing to enter the atmosphere

After action taken:



Canopy built over exit – dust extraction unit now drawing away.

- Carrying out a 'deep clean' of the whole working area to remove dust that had accumulated over a long period of time

Revised clean-down procedure at shift end:

- A push along sweeper (cost £500) with built in vacuum generator was used to sweep the floors - previously, broom and a wheelbarrow was used to collect any dust that had accumulated. The sweeping process generated large amounts of airborne dust.
- A large industrial vacuum cleaner was also bought (cost £2200). The vacuum cleaner is used for gaining access to areas where the sweeper could not access.
- Face fits were carried out on the operatives using an improved dust mask. The masks are worn during clean-down as this is the task where the operatives are exposed to higher levels of dust.
- All in one disposable suits were provided for clean-down so that the overalls worn by the crew during the remainder of the shift did not become contaminated with dust. Following clean-down, the overalls are disposed of.
- The original dust collection trays were difficult to access. This meant that they were often left un-emptied. As a result, waste material spilled onto the floor and was either spread around by the crews whilst walking about, or it was blown around by the wind. The trays were modified so that they could be easily removed at the end of each shift without the need to remove heavy guards.

Addition of dust suppression equipment on the reject conveyor:

It was noted that when the reject conveyor was activated, the blocks when falling off the conveyor into the waste skip generated small clouds of dust. A trial was carried out where the blocks were sprayed with water using a garden sprayer to see if it suppressed the dust.

Results were very good. As a result a spray bar taken from a redundant piece of equipment was fitted. Now, as soon as the reject conveyor is activated, the water sprayer is activated and a water mist suppresses the dust.



As blocks ejected from the waste conveyor, water used to suppress dust

- **Result**

Occupational dust monitoring survey carried out in February 2012 showed that during the production shift exposure to respirable crystalline silica is minimal (well within the WEL and internal limits of exposure to Total Inhalable Dust, Total Respirable dust and Respirable Crystalline Silica) compared with previous results.

The actions undertaken mean that there is no requirement to wear respiratory protection during the production operations. The only time where RPE needs to be worn is during the clean-down period at the end of each shift.

By using in-house expertise and ideas; cost effective and efficient solutions have been implemented with great success.

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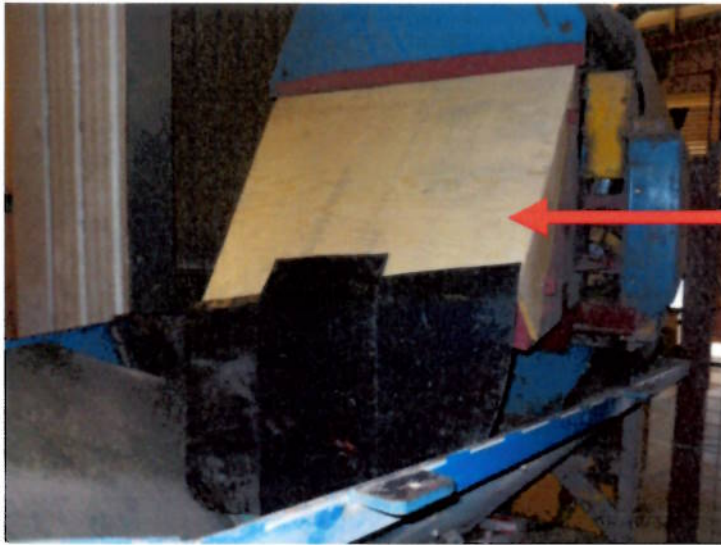
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