



Trade &  
Investment  
Mine Safety

# Central West participatory ergonomics

Ergonomic initiatives



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Central West Participatory Ergonomics- Ergonomic Initiatives

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**More information**

[www.resourcesandenergy.nsw.gov.au/safety](http://www.resourcesandenergy.nsw.gov.au/safety)

**Acknowledgments**

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## Foreword

The following document outlines the ergonomic initiatives implemented by quarries that participated in the Central West participatory ergonomics program. The aim of the program is to reduce musculoskeletal injuries in state's mining industry. Research shows that manual handling related claims cost the industry about \$7 million a year and half of all quarry injuries are musculoskeletal-related.

The department, in conjunction with the Central West NSW branch of the Institute of Quarrying Australia assisted in the smooth success of the program in this region. The participatory ergonomics program equips participants with the skills to identify hazardous manual tasks and using the hierarchy of control to implement solutions to reduce the hazard. The program uses researched innovative messages that are designed to gain access directly with the workers on the issue as well as complement the site-based participatory ergonomics programs.

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## Westlime Parkes- augur unblocking system

### **Issue**

The augur became blocked or chocked from small mill balls of lime or increased moisture within the product.

Unblocking involved working at heights with an elevated work platform. In addition the operator would be required to use a heavy hose to unblock the augur or if this was unsuccessful use a needle gun that would require exposure to vibration for long periods of time.

### **Solution**

Install a reverse switch on the augur control board. When a blockage occurs switch the augur in reverse for approximately five seconds, then change switch and 90% of the time the blockage is clear. If the augur remains blocked, open the air activated door on the bottom of the augur and run in reverse until emptied, then change direction back, shut door and operate. This will clear the blockage.

### **Benefit of initiative**

It has eliminated the manual task and risk from working at heights. Furthermore there has been a significant cost saving due to less down time of the augur. Previous method of clearing the augur would take approximately four to six hours to clear depending on the size of the blockage.

### **People involved**

Idea and process was developed by the site staff and the installation by site electrician.

### **Contact details**

Andrew Commins- Production Manager, Ph 0429 617 274 or [andrew@westlime.com.au](mailto:andrew@westlime.com.au)



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## Hanson- Clarence Quarry/ Kable Sands- 200Lt drum lifter

### **Issue**

Dust suppression concentrate is supplied in 200Lt drums. These drums are stored in an area of the workshop not accessible with an overhead crane. The drums need to be manhandled to dispense the concentrate.

### **Solution**

The implementation of a 200Lt drum lifter and mover to handle the concentrate. The lifting device has a winch system that can hold the drum in any position and a foot pump to help lift the drum in the air.

### **Benefit of initiative**

The task only requires one person and there is no manual handling required.

### **People involved**

The supervisor and fitter

### **Contact details**

Paul Chandler, Quarry Manager, 02 6355 2640, [Paul.Chandler@hanson.com.au](mailto:Paul.Chandler@hanson.com.au)



## Metromix Pty Ltd- Marrangaroo- Clearing out the C9 tail drum roller

### Issue

The build of material in the guard of the C9 trail drum roller, there are number of risk factors within job these include:

- Posture:
  - leaning over to undo the bolts
  - twisting when shovelling out materials
  - bending to scrape materials from the spillage area
  - crouching to reinstall tail drum guard
- Exertion:
  - High exertion to take the weight of the guard when full of material so the guard bolts can be removed
  - High effort in shovelling the material out of the tail drum area
- Repetition
  - This task can occur many times per week due to wet weather factors
- Vibration
  - Transferred vibration is experienced when shovelling material
- Duration
  - This task usually takes between 30 minutes to 1 hour to complete.



### Solution

Changes made were:

- Redesign tail drum roller guard so material can be cleared without removal of the guard
- Construct and install guard



### **Benefit of initiative**

The guard installation has now eliminated the hazardous manual task. Prior to the guard being created there was an 80% exposure rate to the hazardous manual task, with the installation of the newly designed guard the exposure risk for this task has been eliminated.

Also the added advantage is no down time in production due to tracking issues in the cold wet environment.

### **People involved**

Shane Burton – Quarry Manager  
Phil Kable – Quarry supervisor  
Frank McDonald – Quarry operator – all rounder  
Mathew Hewitt – Quarry operator – trainee fitter

### **Contact details**

Shane Burton – 0423 832 215, shaneb@metromix.com.au

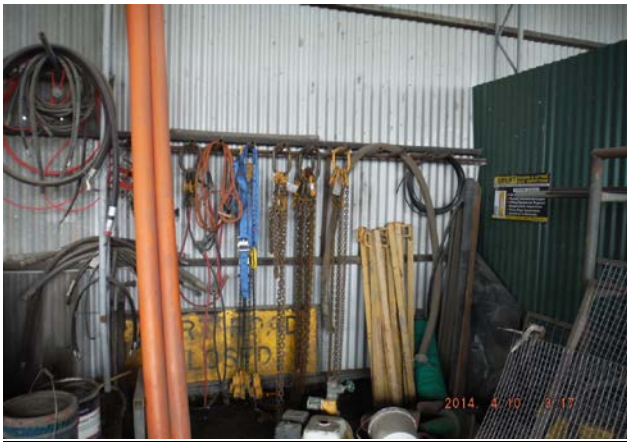


## Hanson- Molong Quarry- storage and lifting of chains.

### Issue

Lifting of chains at Molong was identified as a hazardous manual task. The issues identified by the work team include:

- Heavy lifting – some of the chains weigh approximately 40kg.
- The chains were being stored on the chain rack which required the workers to lift the chain above shoulder height to attach to the hooks.
- Due to the mass of the chains, people were not putting them away on the chain rack, and as such people were leaving them on the floor making them a trip hazard.
- Housekeeping was poor and objects were being placed in front of the chain hooks.



### Solution

Developed with supplier a chain box, so the chains would be easy to put away, there is no awkward lifting and no trip hazards. Had seen something similar on site visit to Westtrac but the quarry decided to extend the chain box to include signs, and dates the chains need to be tested and tagged. Since implementing the solution it has reduced the hazardous manual component of lifting the chains has saved time and the staff know exactly where each chain should go.



**People involved**

All of Molong Quarry

**Contact details**

Chris Cooke  
Phone 0409 907 043 or [chris.cooke@hanson.com.au](mailto:chris.cooke@hanson.com.au)

## Holcim Dubbo- Reduction of manual handling tasks at conveyor number two

### Issue

Finding a way to eliminate spillage and reducing the risk of injury when changing the impact rollers. To change the impact rollers required awkward posture, twisting of the back and heavy lifting with each of the impact rollers and frames weighing more than 40kg. In addition there is increased risk of exertion with the use of a crow bar and there was also the issue of increased risk of pinch points of the hand when undertaking the task.



### Solution

To remove the use of impact rollers and change to an impact bed, this would enable conveyor area to be at one level to improve the skirting rubber adjustment and minimise the deterioration of the skirts. In summary positive outcome as a result of the changes include:

- Less spillage due to support under impact zone
- Less rollers to maintain

- Less hand movement from using the spanner and less vibration from using a rattle gun when adjusting skirting rubber
- Less time spent adjusting the skirting rubber due to support of the impact zone
- Less manual handling issues



### **People involved**

Brendon McLeod, Adam Blackhall, Tony Luke and Alasdair Webb.

### **Contact details**

Holcim Dubbo Quarry 02 68 841 455; Tony Luke (Quarry Supervisor) 0407 208 341; and Alasdair Webb (Quarry manager 0419 477 278)

## Boral – Western Quarries Talbragar- Replacing worn impactor crusher breaker plates

### Issue

Previous way to install the plate was with a sling, you manually had to push the plate into position which increased the risk of pinch points with the hands. The team was also required to locate the holes for the bolts with the sling holding the plate out of position. The plate weighs 200kg.



### Solution

Design a tool to minimise the manual handling required when installing breaker plates. The design of the tool allows for the correct location of breaker plate mounting points which reduces the exposure of hands to the plate minimising risk of pinch points. It has also minimised manual handling required by exertion and awkward position.



**Benefit of initiative**

It has made the job safer as it has reduced the exposure to pinch points, the exertion required to move and hold the plates and the posture required to get inside the crusher to manouver the plate.

**People involved**

All personnel on site

**Contact details**

John Patterson 0401 893 304

## HY-TEC Austen Quarry- manual handling scalps chute repairs

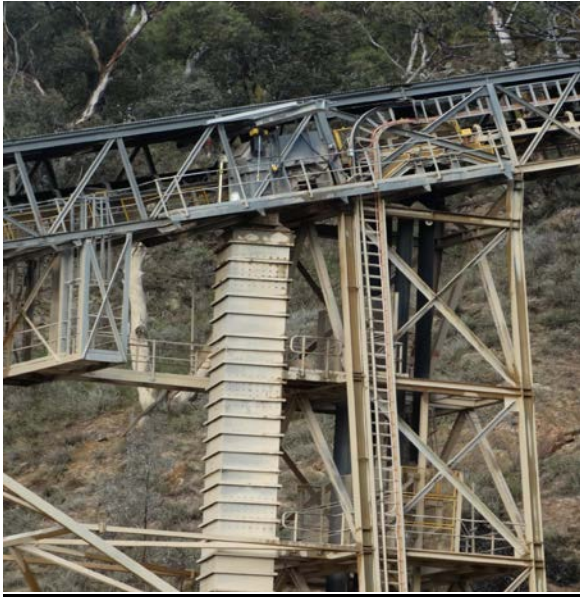
### **Issue**

Man handling parts, rock ledges and wear plates up several flights of stairs to repair scalps chute.



### **Solution**

Install a new mono rail beam with electric hoist, to raise tools and part to each level of the scalps chute.



### **Benefits**

It reduces the need to carry all material up several flights of stairs. It has also reduced the time to repair the scalps chute, by approximately five hours.

### **People involved**

Maintenance staff

### **Contact details**

Rodd Welsh, HY-TEC Austen Quarry Production Manager 0418 292 843