



**NSW  
Resources  
Regulator**

INVESTIGATION REPORT

# **COAL WORKER PNEUMOCONIOSIS – WORKER Y**



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## Purpose of the report

This report has been published under section 70(1)(b) of the Work Health and Safety (Mines and Petroleum Sites) Act 2013 to share safety learnings about a reported case of coal worker pneumoconiosis (CWP).

## Mixed dust pneumoconiosis

On 14 December 2017, NSW Coal Services reported a case of CWP to the NSW Resources Regulator.

The NSW Resources Regulator has completed an investigation into the worker's diagnosis.

To protect the worker's privacy, he is referred to in this investigation report as Worker Y.

Worker Y has worked in the NSW coal mining industry since 1980 (except for one month at a power station and one month in a Queensland mine). During that time, Worker Y worked at four mines up until 2006, with the majority of that work being at the Newvale No.1 Colliery (1980 to 1993) and the Dartbrook Colliery (1996 to 2006).

Since 2006, Worker Y has worked in the NSW coal mining industry and attended a wide range of underground and open cut coal mining operations in this role.

In 2014, x-rays of Worker Y identified a lung abnormality. Three years later, further medical review by respiratory specialists determined that Worker Y had mixed dust CWP.

## Investigation findings

The investigation found that Worker Y had been exposed to numerous airborne dust environments throughout his working life but was not exposed to excessive airborne dust away from his employment as a coal miner.

In particular, the investigation identified that Worker Y was exposed to recorded dust exceedances while working on longwalls at Dartbrook Colliery during the period 1996 – 2006. The investigation also noted that regulatory action was taken, by the then mining regulator, in relation to those exceedances.

Despite those periods of known exceedances, it is not possible to assert with certainty to what extent Worker Y's condition was caused by the exposures at Dartbrook or any of the other environments that he worked in. This is particularly the case as Worker Y reports being exposed to dusty conditions at other sites (e.g. 'black from head to toe with dust' at one site).

Therefore, having regard to the inability to attribute Worker Y's CWP diagnosis to specific exposures or sites and the elapsed time since the periods of concern (some 12-35 years ago), the NSW Resources Regulator has determined to take no further action in relation to the matter.

Historically, other workers may have been exposed to dangerous levels of respirable airborne dust. Current and former coal workers are encouraged to maintain their scheduled screening and to contact Coal Services Health on 02 6571 9900 to arrange a medical if they have any concerns about their respiratory health.

## Airborne dust exposure legislation

Between 1985 and 2007, the *Coal Mines Regulation Act 1982* specified limits for exposure to respirable dust in coal mines - quartz-containing dust was 0.15 mg/m<sup>3</sup> of respirable quartz, and respirable dust (other than quartz-containing dust) was 3 mg/m<sup>3</sup> of respirable dust.

Between 2007 and 2011 the *Coal Mine Health and Safety Act 2002* specified limits for exposure to respirable dust in the underground areas of a coal mine for quartz-containing dust as 0.12 mg/m<sup>3</sup> of respirable quartz, and on the surface areas of coal mines as 0.1 mg/m<sup>3</sup>. The limit for respirable dust (other than quartz-containing dust) was reduced to 2.5 mg/m<sup>3</sup> of respirable dust.

The *Work Health and Safety Act 2011* took effect in January 2012. It specified standards of 0.1 mg/m<sup>3</sup> for silica, and 3 mg/m<sup>3</sup> for coal dust (respirable). No specific provision for any variation was made under the WHS Act. However, the specified limits that applied up to 2011 under the CMHS Act continued in force for the purposes of the required major hazard management plan (airborne dust management plan) until its repeal on the 1 February 2015.

On 1 February 2015, the Work Health and Safety (Mines and Petroleum Sites) Regulation 2014 commenced with specified limits for respirable dust (including coal dust) of 2.5 mg/m<sup>3</sup> for coal mines.

A current review is being carried out with respect to the national exposure standards.

## Worker Y employment history

Between 1974 and 1980, Worker Y was employed as an apprentice fitter and later as a tradesman fitter with NSW Railways. Worker Y says exposure to airborne dust in this period was limited.

Between 1980 and 1993, Worker Y worked at Newvale No.1 Colliery as a fitter. Between 1980 and 1984, Worker Y did not work in a production panel. Between 1984 and 1993, Worker Y worked as a fitter in development production panels where there was significantly more dust exposure.

There are no records of Worker Y undergoing any gravimetric airborne dust sampling (GADS) during the period of employment at Newvale No.1 Colliery. Further, Coal Services GADS reports for the 10 years from 1984, found no exposure failures at Newvale No.1 Colliery.

However, Worker Y contends that the work he undertook in this period was in dusty conditions on mine belt roads and in board and pillar production units, without the use of personal protection equipment (PPE). Worker Y states that when he exited the Newvale No.1 Colliery he was often black from head to toe with dust. He said the dust was so prevalent that it was evident when he cleared his nose and throat.

After leaving Newvale No 1 Colliery in 1993, Worker Y worked for one month at the Wallerawang Power Station and one month at the Gordonstone Mine in Queensland on longwall installation, where dust exposure was limited.

Between 1993 and 1994, Worker Y worked for 11 months on a stone drift construction at Dartbrook Colliery. Worker Y states that the work was dusty, and the bulk of the dust was stone. He wore PPE consisting of a paper dust mask intermittently during this period.

Between 1995 and 1996, Worker Y worked on the longwall at Cumnock Colliery. He said all the work he undertook on the longwall, and subsequently in development, was dusty work. He wore a paper filter dust mask as a shearer driver and chock operator, but not for other activities he undertook during this period. There are no NSW Coal Services GADS records for Worker Y in this period. However, there were two GADS failures of exposure limits for both respirable dust and quartz recorded at Cumnock Colliery during this period.

In 1996, Worker Y returned to Dartbrook Colliery as a longwall operator and later, for four years as a deputy on Dartbrook Colliery longwalls, finishing in 2006. Worker Y states that he was exposed to large amounts of dust during this period. He reports wearing an airstream helmet while working on the longwall, provided by the company. Worker Y is unsure when the airstream helmets were purchased. He noted that their faces were still black at the end of a shift but better with the use of the airstream helmet.

NSW Coal Services GADS records identify that Worker Y was sampled on four occasions while working on Dartbrook Colliery Longwalls (Worker Y GADS sample dates recorded on 8 April 1998, 25 May 1999, 25 November 1999 and 31 October 2002). Worker Y does not recall the specific day or location that these tests were conducted but noted that the longwall ventilation was via intake on the tailgate and return down the maingate and this had the effect of putting the maingate shearer operator in return dust for every shear.

Worker Y failed the GADS exposure limit on 8 April 1998, recording a respirable dust exposure of  $3.2\text{mg}/\text{m}^3$ . The specified limits at that date were respirable dust  $3\text{mg}/\text{m}^3$  and  $0.15\text{mg}/\text{m}^3$  for quartz dust. Worker Y was wearing an airstream helmet at the time of testing.

From 2006 to the date of the x-ray in 2014, Worker Y attended underground and open cut coal mines in NSW for the purposes of inspection, for short exposure periods. There were no NSW Coal Services GADS sampling of Worker Y from 2004 to 2016. Worker Y noted that in this period he always carried a paper dust mask and whenever inspecting a production face, would wear his dust mask. Worker Y's exposure during this period was sporadic.

## Dartbrook Colliery

The Dartbrook Colliery is in the Upper Hunter Valley near Muswellbrook. The mine operated from October 1994 to December 2006. During that period, longwall operators at Dartbrook Colliery were exposed to significant exceedances of respirable dust and, to a lesser extent, quartz dust exposures.

Between 1 January 1994 and 31 December 2001, NSW Coal Services records identify that there were 201 respirable dust exposure failures and 16 quartz dust exposure failures for the Dartbrook Mine.

During this period, the GADS testing revealed numerous serious dust exposures. For example, in 2002, a GADs test recorded a quartz dust exposure of  $1.26\text{mg}/\text{m}^3$  on a longwall worker, which was eight times the exposure limit of  $0.15\text{mg}/\text{m}^3$  quartz.

In 2006 a GADs test recorded  $13.7\text{mg}/\text{m}^3$  on a longwall worker, which was five times over the exposure limit of  $2.5\text{mg}/\text{m}^3$ .

## NSW Coal Services activities at Dartbrook Colliery

Coal Services Pty Ltd (previously known as the Joint Coal Board), approved Coal Industry Act Order 40 Abatement of Dust applications made by Dartbrook Colliery to commence longwall operations. The Order 40 approval was subject to workers wearing approved respirators whenever stone floor was being mined and the operation of the GADS sampling program.

NSW Coal Services GADS reports for NSW Coal Mines were monitored by the Coal Services Standing Committee on Dust Research and Control (SCDRC).

Each longwall block that was to be mined at the Dartbrook Colliery was required to apply for approval under Order 40. The SCDRC Project Manager raised non-compliant dust exposures at the SCDRC and provided written recommendations to Dartbrook Colliery for each individual Longwall Order 40 application approval.

Dartbrook Colliery was the subject of significant attention by SCDRC. The meeting minutes of 2 June 1994, by way of example, identified concerns of five respirable dust failures, the highest being 11mg/m<sup>3</sup> and the Western Drift quartz failure of 0.46mg/m<sup>3</sup>.

SCDRC minutes and Longwall Order 40 approvals from 1994 to 2006 indicate that there were many reasons for the dust exceedances at Dartbrook Colliery. Primary among these was operator location, which by necessity of the ventilation design, put the operator of the shearer in the return dust. It is also noted that the Dartbrook Colliery, in response to department notices, often cited one of the corrective actions taken by the mine as counselling of the operator who was subject to the GADS exceedance. Such responses suggest a failure to deal with issues causing the exceedances.

Other documented reasons for these failures were the breakdown of dust suppression systems, the gas drainage system, dewatering the coal prior to cutting, working on the return side of advancing chocks and ventilation malfunctions and design.

## Compliance activities at Dartbrook Colliery

The mining regulator at the time responded to GADS failures at Dartbrook Colliery on numerous occasions between 1994 and 2006.

On the 14 December 1999, the mining regulator sent a letter to the Dartbrook Colliery requesting action be taken on GADS failures. An internal memo from a mine safety inspector to a senior manager raised the issue of the Dartbrook GADS failures, the actions of the mine and the requirement for a full review of dust controls to be undertaken.

On 10 September 2001, the mining regulator served a *Coal Mines Regulation Act 1982* (CMRA) section 61 notice on Dartbrook Colliery concerning issues with dust exposures. The mining regulator requested informal and formal reports to eliminate the non-compliant GADS.

This was followed on 18 December 2001, by the mine safety inspector for the mine recording an internal memo to the Chief Inspector discussing a meeting the inspector had with the Dartbrook Mine Manager, the CFMEU District Check Inspector (DCI) and the Dartbrook Local Check Inspector (LCI) concerning GADS failures. The internal memo noted the following:

- primary cause for continuing failures is a fundamental change in seam characteristics
- the Dartbrook Colliery to present on the issue at the next SCDRC
- the inspector will invite SCDRC to inspect Dartbrook Colliery.

Further GADS failures resulted in another letter dated 23 December 2002 from the mining regulator to the Dartbrook Mine Manager, asking what control measures were undertaken to address the recent GADS failures and requesting a formal response.

On 15 January 2003, the mining regulator issued a second CMRA section 61 notice on Dartbrook Colliery's Mine Manager warning that continued GADS failures would need to consider cessation of longwall production.

On 8 July 2003, the mining regulator sent a letter to the Dartbrook Mine Manager regarding failed GADS sample S070/03, requesting the mine prepare a report into the failure detailing remedial actions to prevent re-occurrence.

On 21 August 2006, the mine safety inspector for the mine visited Dartbrook Colliery to discuss GADS failures recorded between 17 July 2006 and 13 August 2006. He made handwritten notes to record that he had verbally advised the Dartbrook Mine Manager that he would shut down the longwall if the issue was not rectified.

Following the inspections on 21 August 2006 and 29 August 2006 with the Dartbrook Mine Manager and LCI, the mine safety inspector advised Dartbrook that continued GADS failures would result in the longwall being shut down.

Dartbrook Colliery ceased production and was placed in care and maintenance in December 2006.

## Correspondence with stakeholders

As part of its investigation into this matter, the NSW Resources Regulator wrote to several organisations and requested they communicate with former mine-workers of Dartbrook Colliery to ensure that their health screening was up to date. Those organisations have confirmed that they have acted on the NSW Resources Regulator's request.

## Recommendations

Current and former coal workers are encouraged to maintain their scheduled screening and to contact Coal Services Health to arrange a medical if they have any concerns about their respiratory health.

NSW Coal Services has the following guidance material available:

- Coal Services Protecting against airborne dust exposure in coal mines ([www.coalservices.com.au/wp-content/uploads/2016/12/NEW-CS-Dust-Booklet\\_Final-artwork.pdf](http://www.coalservices.com.au/wp-content/uploads/2016/12/NEW-CS-Dust-Booklet_Final-artwork.pdf))
- Coal Services Prevention of pneumoconiosis in NSW ([www.coalservices.com.au/wp-content/uploads/2017/03/Prevention-of-Pneumoconiosis-in-NSW-information-for-workers-February-1-1.pdf](http://www.coalservices.com.au/wp-content/uploads/2017/03/Prevention-of-Pneumoconiosis-in-NSW-information-for-workers-February-1-1.pdf))

Mine operators should ensure the adequacy of the principal hazard management plan for airborne contaminants. That review should include:

- the hierarchy of controls

- all dust suppression measures, including the method of mining
- mine ventilation to remove dust
- all PPE supplied to filter dust
- atmospheric monitoring
- worker monitoring
- worker education and supervision.

Further guidance published by the NSW Resources Regulator is available at:

- [Dust safety in the metals and extractives industries booklet](#)
- [Airborne contaminants principal hazard management plan guidance for the NSW mining and petroleum industries](#)
- [Fact sheet airborne contaminants](#)