

Improving the

SAFETY AND HEALTH PERFORMANCE OF COPPABELLA MINE

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Ltd

Summary

During the previous financial year the safety performance of the Coppabella coal mine deteriorated significantly despite significant efforts directed at the mine's safety management system.

Following a high potential incident that occurred during December 2001, operations at the mine were stopped for 24 hours and all site employees met with senior management to discuss mine safety performance.

A set of initiatives targeting the safety and health behaviour of employees was introduced. Coppabella's safety performance during the current year has greatly improved from LTIFR of 18 last financial year to less than two currently. The organisational culture at Coppabella continues to be positively impacted by the human factors initiatives introduced.

The paper shall discuss in chronological sequence the reasons for the poor safety performance at the Coppabella mine during 2001, elucidate the many safety initiatives introduced at the start of 2002 and discuss the relative success of these initiatives.

The information presented should prove useful to other mines considering the implementation of human factors initiatives as a method of improving safety and health performance.

Introduction

Australian Premium Coals Pty Ltd is the operator of the Coppabella Coal Mine located approximately 130km west of Mackay in Central Queensland. Mining operations were established extremely quickly with the mining lease being granted on 1 June 1998 with the first shipment of coal occurring on 6 November 1998.

The mine currently operates a conventional open cut truck and excavator strip mining operation. Market acceptance of the low volatile PCI coal produced has been rapid and therefore production volumes have grown rapidly from a production rate of 2Mtpa to 4Mtpa product coal during the past 18 months.

The operational management structure at the Coppabella Mine is unusual in that all mining and coal processing operations on site are undertaken by contractors and unlike most other contract mining operations in the Bowen Basin a number of mining contractors are engaged in the removal of overburden and coal mining.

During the 2001 financial year in order to meet

production targets three mining contractors were engaged, Peter Champion, Roche and Leighton with Sedgman responsible for the operation of the coal processing plant and train loading operations.

Australian Premium Coals (APC) manages operations through a site senior executive who is responsible under the Coal Mining Safety and Health Act for site safety management as well as the production performance of the mine.

Due to the number of separate organisations operating on site a great amount of effort was invested during 2000/2001 to ensure that the site safety management system adequately addressed site hazards and introduced communication systems that led to appropriate controls being in place to manage the interface between the various site contractors.

Both internal and external audits undertaken upon the safety management system indicated that although there was room for further refinement the system operated well and covered all identified principle hazards appropriately.

Historical Safety Performance

The Coppabella mine was constructed without the occurrence of a lost time injury and began operations with a good safety record. However, a seriously deteriorating trend developed during the financial year 1999/2000. During 1999/2000 the serious incidents included a steel splinter penetrating an eye caused by the use of a steel hammer when replacing a scraper cutting edge and a fracture to an ankle caused through improper practice when replacing a haul truck tire.

During 2000/2001 nine lost time injuries were sustained, the most serious of which included:

- an operator sustained a serious eye injury and fractured cheek bone when a hydraulic oil cap blew off unexpectedly
- an operator sustained a fracture to the lower leg when a co-disposal pipe he was separating dropped unexpectedly
- a boilermaker sustained burns to his right hand when he opened a bottle of acetylene whilst holding a striker in the same hand
- two injuries were sustained resulting from splinters of steel penetrating the legs of maintenance personnel when striking steel hammers against hardened steel surfaces.

A significant number of high potential incidents also occurred during the 2000/2001 year.

Triggers for Action

The significant deterioration of Coppabella's

safety performance during the 2000/2001 year resulted in concentrated efforts to improve the mine's safety management system.

Activities during 2000/2001 included the undertaking of two site wide Principal Hazard Risk Reviews, two external safety management system audits as well as a number of internal audits undertaken by the principal site contractors.

The Mines Inspectorate also undertook audits of Coppabella's safety management system with generally favourable results.

At 4am on the 21 December 2001 a truck driver was hit by a CAT 785 haul truck during a 'hot seat' change out. The driver passed underneath the truck between the tires. The operator only sustained a minor fracture to the right foot and minor abrasions.

How close the mine had come to the occurrence of a fatal accident was a shock to all of us associated with the operation. The near fatal consequences of the accident triggered an immediate senior management review of our safety management approach.

It was decided that a set of initiatives targeting the human factors impacting upon safety performance would be introduced at Coppabella. Management believed that the Safety Management

System adequately covered issues such as safe conditions and equipment and a multitude of safe work procedures but that recent initiatives had not targeted safe work behaviours adequately (see figure 2).

Initiatives Targeting Safe Work Behaviours

APC undertook a review of human factors safety initiatives both within and external to the coal mining industry in Australia and the United States in particular targeting health and fitness initiatives.

Generally, the responses received from contacts¹ within the United States indicated that employer assisted exercise or fitness initiatives were common in particular amongst manufacturing firms.

Quite often organisations have gyms on site or will financially assist employees to join a fitness club or gym. Some organisations are introducing yoga and aerobic classes at work generally with the active assistance of their employees.

In Queensland, Powerlink Queensland has a large gym facility established at their central office and workshop facility in Virginia.

The company funded the provision of the gym equipment whilst ongoing maintenance is funded by employees through social club fees. An active recreation club committee manages the facility which is actively utilised during lunch periods and

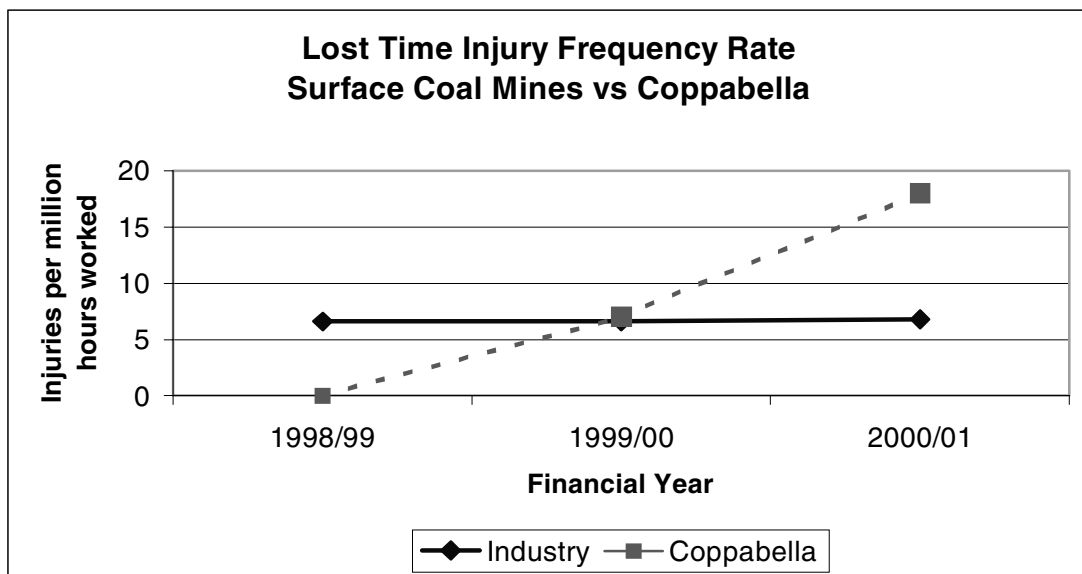


Figure 1. Historical Coppabella and Industry Average LTIFR

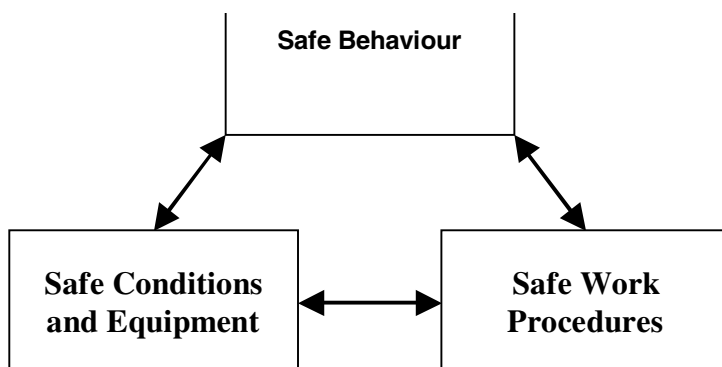


Figure 2: Safety Management Model

prior to and after work hours. Approximately 40 percent of recreation club members utilise the gym facilities on a regular basis.

The recreation club employs a part time qualified gym instructor. The facility is seen as an important symbol of commitment by the employer to the health and wellbeing of their employees. Powerlink has an exceptional safety record working within a potentially hazardous work environment.

Discussions with organisations such as SIMTARS, QMC, CFMEU and Mines Inspectorate and several Queensland mining managers were held to gain an appreciation of the human factors initiatives occurring within the coal mining industry.²

Many of the initiatives active in the industry reflect the particular fitness for duty policies of each mine, particularly in relation to drug, alcohol and fatigue issues.

From discussions with industry stakeholders it was apparent that Thiess had significant experience with human factors safety initiatives in particular, health and fitness, driver training and employee assistance programs.

There does appear to be an increasing interest in the application of exercise and other health initiatives to improve safety performance in Australia.

Key lessons from interviews with many people undertaking human factor safety initiatives are the importance of visible CEO commitment and involvement of the workforce in the implementation of any initiatives.

In many instances what some Australian mining companies are implementing is at the forefront of general industry safety practice.

Coppabella Human Factors Safety Initiatives Mine Safety Day:

On the 8 January 2002 mine operations were halted for 24 hours so that an opportunity was provided for all employees to attend a safety seminar. More than 160 employees, supervisors and management attended the

seminar. The Chairman, General Manager and Senior Site Executive of Australian Premium Coals made presentations upon safety performance and safety objectives for the mine. The results of the investigation into the near miss fatal accident were also presented.

Senior executives of all of the contractors and sub-contractors to APC were in attendance to ensure that a consistent message of commitment was sent to the entire workforce.

Following the presentations a workshop was held with supervisors, open cut examiners and management to share views upon ways to improve the safety culture and safety performance at Coppabella.

Shift durations and fatigue:

Although not an identified direct contributing factor to the accident of the 21 December, fatigue is considered as a potential hazard. All contractors were asked to undertake a review of their shift roster arrangements in particular to investigate the hazards associated with the duration of the first night shift back from a break.

1 A list of contacted organisations is available from the author upon request.

2 A list of consulted organisations is available upon request.

Yoga influenced exercise program:

APC would arrange for yoga influenced exercise classes to be held at suitable locations to allow employees and their families to attend over a three month trial period. The objective of the classes was to improve employee fitness and alertness. Over time the exercise initiatives have shifted to focus aerobic exercise.

Operator cabin housekeeping initiative:

An inspection of the cabins of mine vehicles demonstrated that in some vehicles the cabins were being kept in an untidy manner. Vehicle cabin housekeeping standards are a reflection of the employee's view of their workplace and therefore a program of housekeeping improvement and inspection was initiated.

Entry to Minex safety assessment process:

In order to benchmark Coppabella's safety

APC SAFETY AND HEALTH BELIEFS

- **All fatalities, injuries and diseases are preventable.**
- **No task is so important that it cannot be done safely.**
- **All hazards can be identified and their risks managed.**
- **Everyone has a personal responsibility for the safety and health of themselves and others.**
- **Safety and health performance can improve.**

Safety awareness is the state of mind where we are constantly aware of the possibility of injury and act accordingly at all times.

Figure 3. APC Safety and Health Beliefs

management systems and standards APC committed to entering the Minex Safety Awards process during 2002. The Minex awards process is run annually by the Minerals Council of Australia as part of its safety and health leadership program which aims to eliminate industry fatalities, injuries and diseases.

Numerous other smaller initiatives were undertaken on site and further are planned in the future including the introduction of a Contractor Health and Safety Charter.

Measurement of performance

All improvement programs have an audit or measurement process to monitor improvement progress. The graph below indicates the number of attendances at fitness classes has declined over time. Contractor project managers are responsible for undertaking weekly audits of the condition of their mine vehicle's operator cabins and reporting results to APCs site senior executive. Every month the table of outcome statistics illustrated in Figure 5 is reported to Joint Venture participants.

Safety and health beliefs statement:

Coppabella currently has a safety and health policy for the guidance of the safety management system however the policy does not provide motivating objectives that would influence safety behaviour. A Safety and Health Beliefs statement has been developed as indicated in Figure 3.

Results

During the past financial year the LTIFR at the Coppabella mine has decreased from 18 to less than two, the mine only experienced one lost time injury during the past financial year. The DIFR has also been halved from what it was twelve months ago to just over eight. Despite such progress significant room for improvement remains in both DIFR and reducing the frequency of high potential incidents.

The pace of change at Coppabella has been rapid and these changes present further opportunities to improve the site's safety performance. During the course of the next year the number of principal contractors will reduce from four to two. Such a reduction will greatly reduce the complexity of the safety and health management system and thereby decrease the probability of non-compliance.

Lessons Learned

The three hurdles which need to be overcome to improve human factors safety performance are:

- 1 **Complexity:** Safety management systems can become too complex to enable high levels of compliance to be achieved with limited resources. A common response to an accident is to impose another layer of control instead of improving the effectiveness of the existing controls. The change in safety and health legislation and enforcement has tended to lead to increasing complexity of safety management systems at times to the detriment of safety performance outcomes.
- 2 **Cynicism:** Everyone needs to believe that APC management is committed to improving safety and health performance at the mine site. Consistently 'walking the talk' is the only way to decrease cynicism.
- 3 **Complacency:** Long-term familiarity with equipment, systems and processes can lead to an 'it will never happen to me' attitude. An organization can also become complacent following a period of relatively good safety performance. Constantly striving for excellence and introducing changing safety initiatives are appropriate weapons against complacency.

The three features that safety improvement initiatives need to impact to eliminate complexity, cynicism, and complacency are:

- 1 **Commitment:** Top down management action for improving safety performance needs to be demonstrated. Management need to publicly demonstrate their belief that the Coppabella safety vision can be achieved and that resources are available to achieve the vision.
- 2 **Consistency:** People seek consistency between values and behavior. APC must be able to establish safe work behaviour as a true and fundamental value in the workplace. Management actions and works in support of the safety vision must be consistent and constant, if we are to be taken seriously by our employees and peers.
- 3 **Co-operation:** A team based approach has been

FITNESS CLASS ATTENDANCE

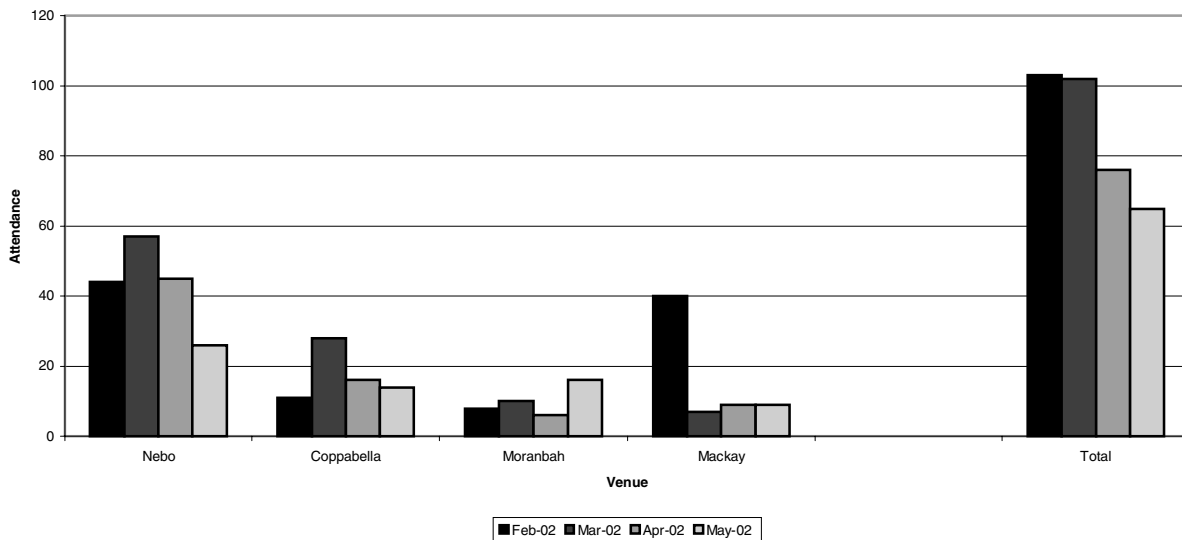


Figure 4: Exercise Class Participation

found to be more successful in achieving positive safety perceptions and therefore behaviour. Senior and site management need to agree upon strategies for safety improvement and also operator level initiatives need to be encouraged and supported.

One management initiative that was utilised at Coppabella perhaps more than during other mine safety improvement initiatives was the use of the media. Historically, the media has not been utilised to demonstrate corporate commitment to safety improvement in the mining industry.

The high level of media interest in the safety initiatives at Coppabella indicates the increasing level of general public interest in safety. The public increasingly will not accept fatalities occurring in a workplace and will exercise their power through the media and political

representatives to drive change.

The decisive and public response by APC to the serious accident in December 2001 converted a potentially negative media event into a positive news story for the mine and the industry. The Coppabella exercise program was one of the few front-page positive news stories during the past year for the coal mining industry.

Media coverage gained through the introduction of the exercise classes at Coppabella also put fitness and safety on the crib room table agenda. People began to talk about safety and fitness at the workplace.

Not everyone had a positive opinion of the initiative but everyone had an opinion and having those opinions shared at the operator level around the crib room ensures that safety issues are being discussed.

Figure 5: 2001/2002 Year To Date Safety Statistics

	APC	Contractor 1	Contractor 2	Contractor 3	Contractor 4	SITE WIDE TOTALS
TOTAL MANHOURS	10,587	126,154	222,030	198,492	50,119	607,382
DISABLING INJURIES	0	0	3	1	1	5
LOST TIME INJURIES	0	0	0	1	0	1
D.I.F.R	0	0	13.51	5.04	19.95	8.23
L.T.I.F.R	0	0	0	5.04	0	1.65
MEDICAL TREATMENT INJURIES	1	2	2	4	2	11
FIRST AID TREATMENTS	0	0	3	4	4	10
DAYS LOST TO INJURY	0	0	0	30	46	76
HIGH POTENTIAL	0	1	4	4	2	11
NEAR MISS	0	1	2	3	1	7
FIRE	0	0	1	5	0	6
DAMAGE INCIDENT	0	3	12	8	2	25

Please Note: As from AFY02 onwards, annual safety statistics will be reported as a 'rolling safety statistics report'. This means that at the start of each financial year the statistics will not 'zero', rather a month will be dropped off as another month is recorded, this will keep an accurate report of the last twelve months regardless of which month we are currently in.

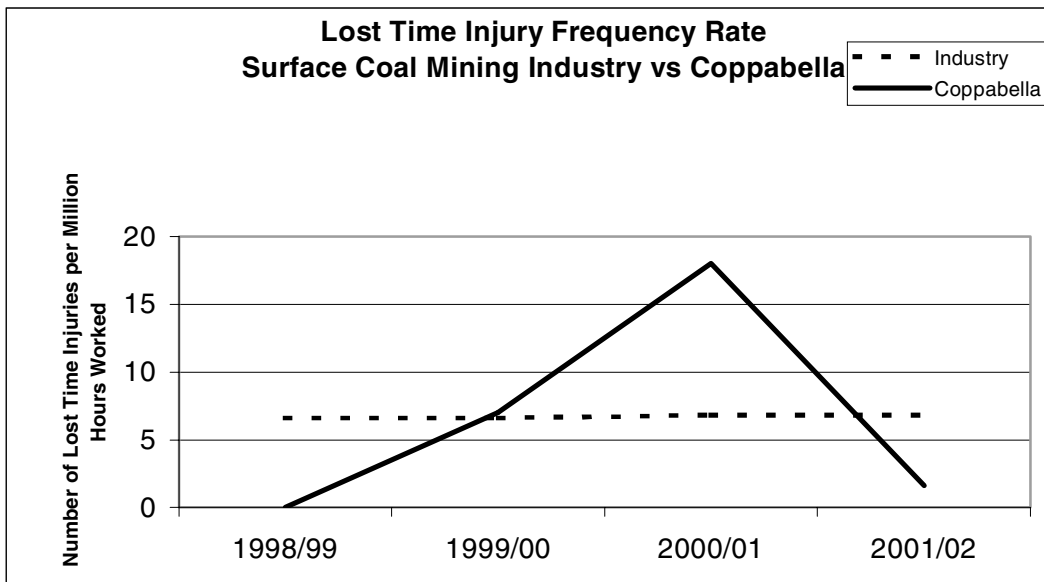


Figure 6: Coppabella LTIFR

The use of both internal and external media has a powerful impact upon behavioural safety programs and a media strategy should be considered whenever a behavioural change program is being implemented.

Future Initiatives

One comment consistently heard from safety and health professionals and line managers with experience in human factors safety initiatives is that no matter how good your safety and health program, it needs to be changed every three to five years as it grows stale. APC shall therefore review human factors safety initiatives on an annual basis with a view of implementing a program of continual change in human factors safety initiatives.

Such change ensures that site safety management does not become complacent especially should current initiatives demonstrate a high level of effectiveness.

Conclusion

The increasing complexity caused by the rapidly increasing scale of mining operations at Coppabella was one of the causes of the poor safety performance achieved during the 2001 financial year.

The fast pace of change led to a less than adequate compliance performance with the safety management system, however through concerted management action safety performance has rapidly improved.

The historical safety performance of the mining industry demonstrates that high standard safety management procedures and standards alone are not the answer to improved safety performance.

Similarly, human factors safety initiatives implemented in isolation will not be successful in reducing incident rates.

The integration of efforts that improve the standard of safety management processes with efforts that positively influence the safety and health culture and thereby behaviour of mine workers is critical to ensure success in improving safety performance.

'Anything in history or nature that can be described as changing steadily can be seen as heading toward catastrophe.' Susan Sontag

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¹ A list of contacted organisations is available from the author upon request.

² A list of consulted organisations is available upon request.