

# ANALYSIS OF THE COAL INDUSTRY EMPLOYEES HEALTH SCHEME DATABASE

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## ABSTRACT

The Queensland Coal Industry Employees' Health Scheme commenced operation in May 1993. Since that date, health assessments have been undertaken on more than 9000 coal industry workers. The health assessments are carried out under the supervision of medical practitioners, who are contracted by the mines, but work to guidelines established by the Queensland Coal Board (QCB). The health assessments are used as a pre-employment screening tool to assist in managing health and consequential safety risk factors, while on-going periodic health assessments enable the early identification of health or safety risk factors. Once identified, the risks can be managed.

Data from the health assessments is confidential and is recorded in a health database managed by the QCB. On request, information from the database is supplied in a statistical format to assist mine operators, health providers, unions, government and health researchers focus attention on health and safety issues.

Analysis of the database indicates that the problems of cardiovascular disease and hearing loss needs to be addressed. It shows that while some health issues are evenly spread across the coal mining community, others apply specifically to particular age groups and /or specific communities.

The analysis also has led to the identification of certain limitations of the value of the information. These include distortions rising from the mobility of the workers which causes differences between the number of employees at the mines and those recorded on the health database.

## INTRODUCTION

In 1991, a Working Party consisting of representatives of the industry, mining unions and the QCB was established to review the limitations of the 1982 QCB Health Scheme (Rathus and Abrahams, (1)) and developed a periodic health assessment scheme. The main focus of the health assessments was the evaluation of the extent to which potential or existing employees were at risk to either themselves or others in the workplace (Watson (2)). Under the powers of the QCB, a new health scheme was cast into legislation as the 'Queensland Coal Industry Employees Health Scheme, 1993' (Qld Govt Gazette (3)).

The aims of the scheme (QCB, (4)) are as follows -:

- to ensure entrants to the coal industry are fit to undertake their specified duties without risk to themselves or others in the workplace;
- to ensure existing employees in the coal mining industry are fit to continue to perform their specified duties without risk to themselves or others in the workplace;
- to provide a means of early identification of those conditions or behaviours which may inhibit employee ability to perform specified duties without risk to themselves or others;
- provide, over the medium and long term, extensive and reliable health and lifestyle information ; and
- to provide a heightened employee and employer awareness of the individual and collective benefits of workplace health screening and monitoring.

The health services are provided under direct contracts between the mines and their medical advisers. The role of the QCB, is to provide processes for the approval of Nominated Medical Advisers (NMA) to a minimum standard, and to supervise the confidential storage of records and the electronic capture of data. The capture of data on an electronic database was seen as having potential to facilitate epidemiological studies into factors that may be related to coal mining health and safety.

## **PRE-EMPLOYMENT AND PERIODIC HEALTH ASSESSMENT**

Following initial or pre-employment assessments, mine workers have on-going health assessments at periods of up to five years. The scheme provides for the collection of personal details on work and health history, clinical findings and a report to the employer in relation to the employee's ability to perform either any tasks or specific tasks in his/her employment. Details of the health assessments of individuals are confidential and are not available to the company, other employees or to persons unless specially authorised by the individual.

The health assessment includes the following :

- collation of work and medical history;
- age, sex, height and weight;
- hearing;
- cardiovascular system;
- respiratory system;
- musculo skeletal system;
- urinary system;
- abdomen and skin.

## **THE ROLE OF THE NOMINATED MEDICAL ADVISERS**

The 1993 Health Scheme Order provides for professional medical services to be rendered at each mine by a Nominated Medical Advisers 'who has been nominated by (the mine) manager and approved by the QCB' (3). This provides consistency of standards and continuity of service for a set period. As well as having access to the necessary equipment to undertake the health assessments, the medical practitioners are required to have an interest in occupational health for coal industry employees and some familiarity with the mining environment at their respective mines.

Incidental to the requirements of the Health Scheme, is the need for the Nominated Medical Advisers to interact with the local rural community and local general practitioners. While most Nominated Medical Advisers live in the local mining communities, a significant number of mines are serviced by Advisers who are occupational health specialists located in Brisbane or other regional centres. While there was an element of apprehension in a commercial sense, from local general practitioners in relation to the Health Scheme, experience has shown that the health assessment program has raised the general levels of health awareness and created additional opportunities for local health professionals.

The Health Assessment forms and chest X-rays are checked and evaluated by the Nominated Medical Advisers who reports to the mine on the fitness of the employee or potential employee. It includes notes on any restriction to the employment that may be required. Copies of the Health Assessment forms and the original X-rays are forwarded to the QCB for processing and filing.

The QCB facilitates six monthly meetings of the Nominated Medical Advisers. These meetings help the doctors form networks which has become important in handling difficult issues consistently. There has been a shift in the nature of issues discussed at the meetings. The earlier meetings discussed technical issues and health assessment standards. Most of these issues have been resolved and the interest of the meetings has been turning to health promotion.

## **DATABASE DEVELOPMENT**

When the forms are received by the QCB, they are checked for errors and the details are recorded in an electronic database. Each employee is given an employee's number and each health assessment an assessment number that facilitates storage and retrieval of specific individual assessment records.

The QCB has developed the database software that provides for data entry via a series of screens that mimic the format of the Health Assessment forms. While some standard reports have been developed, the strength of the system is that it is available for interrogation and analysis by numerous software packages.

One of the limitations in the access of the mining and research community to the database is the ethical issue of confidentiality of the data held on individuals. However, this can be overcome by QCB staff analysing the data and releasing the results in a suitable aggregated form.

## RESULTS TO DATE

### Progress of Health Screening

In the year from May 1995 to April 1996, 3149 persons were added to the database. This compares with 1802 in the first year and 3849 in the second year. This progress is shown on a monthly basis in figure 1. In the first half of 1996, the QCB processed 1352 records of which 60% were pre-employment health assessments.

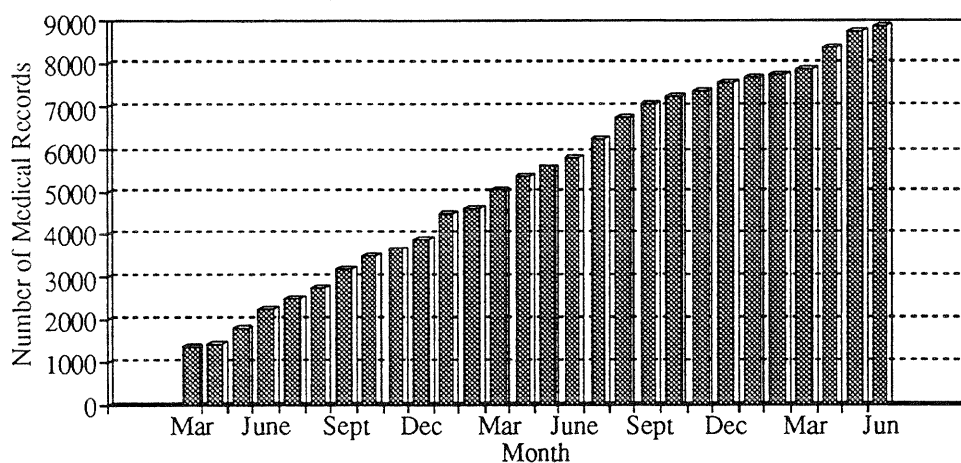


Figure 1 Progress of health screening 1994 to 1996

### Demographic Information

Analysis of the database in relation to age, provides details of the ageing of the workforce in the established opencuts and the relatively younger workforces being employed in the longwall mines. See figure 2. This information has potential to assist community planners.

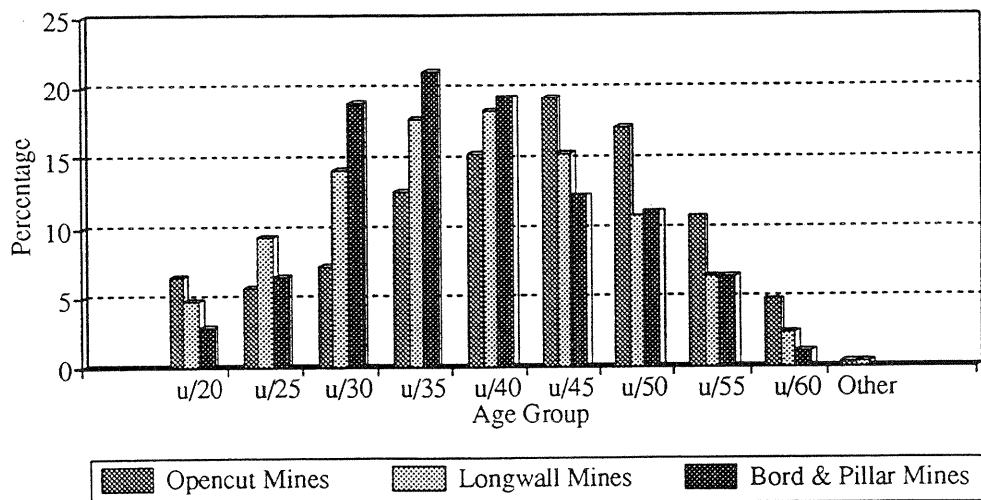


Figure 2 Age Distribution

## Hearing

Hearing loss has been shown to be a major issue in the coal industry. By the age of 50 years, 60% of mine workers have significant noise induced hearing loss when measured at 40dB at 4000Hz.

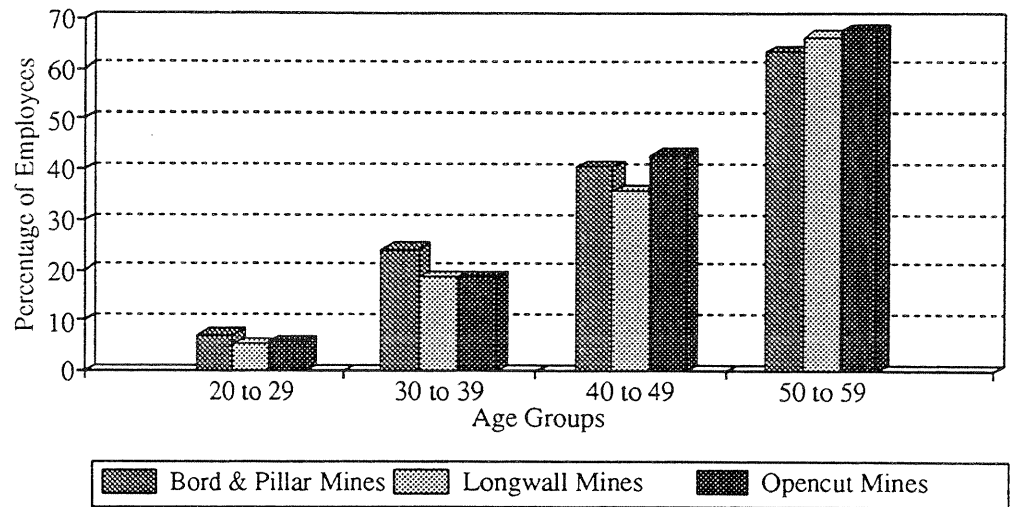


Figure 3 Hearing Loss by Age and Mine Type

### Cardiovascular system

For the most part cardiovascular fitness is relatively good, but analysis of the data has shown that employees at the mines in the Dysart area have raised blood pressure levels.

### Respiratory system

The historical concern on occupational dust related respiratory disease appears not to be supported by spirometry and x-ray screening. No cases of coal dust related pneumoconiosis have been found in the current program, although a few cases of pneumoconiosis related to non-coal sources have been detected.

### Musculo-skeletal system

There are few adverse findings in relation to the musculo-skeletal system in the health screening program. Given the widespread extent of musculo-skeletal injuries in the coal industry (DME (5)), there is some concern that the testing program in this area needs to be upgraded. The need for impairment testing has been recently raised by several mines and doctors.

### Urinary system, Abdomen and Skin

For the most part there are few troubles in these areas. There is some increase in skin cancers shown in the old mining communities such as Collinsville and Blackwater and there is a strong possibility that this may be related to the employment of second generation inhabitants who have lifelong high sun exposure.

### Reports to Mines on Fitness to Work

Information for mines in planning their occupational health strategies is that in excess of 10% of the workforce are not fit to work without restrictions being placed on their duties. In excess of 80 persons out of 4000 have been found in pre-employment assessments to be unfit for working in the coal industry.

## **DISCUSSION**

### **Services Provided by QCB**

The most common enquiries to the QCB are those from doctors assessing coal industry workers who are planning to move from one mine to another. As the use of contractors increases, this type of service is expected to increase. For the purpose of providing security on personal health information, employees are required to request that the QCB release the information to the Nominated Medical Adviser of the other mine.

Because the reading of X-rays for ILO Classification on Pneumoconiosis is a specialist skill, all abnormal x-rays are sent to the Specialists Health Unit of the Department of Health for reading by radiologists. As a part of a quality control program, X-rays read by the NMAs are sampled and sent to the Specialist Health Unit to check on film quality and confirm correct readings. As a matter of course, the X-rays of underground workers with poor spirometry results are also sampled.

At the inception of the 1993 Health Scheme, there was no specific provision in relation to mines rescue. Given the physical assault to the human body in mines rescue training and operations, the Queensland Mines Rescue Brigade in conjunction with the Nominated Medical Advisers and the QCB is reviewing health issues related to mines rescue. This includes health assessment, health standards and the degree to which additional biological monitoring is required.

The QCB supports a number of health and safety initiatives with the Department of Mines and Energy, mines and consulting and research organisations. An important example of this is the 'Health at Work' Project being undertaken by QUT and funded by the Health Promotion Council (Parker (6))

### **Future developments**

Given that the industry workforce number is fairly constant at about 10,000 employees, there are an estimated 2000 health assessments being undertaken on entrants to the industry each year. While it is difficult to estimate, approximately 1000 employees including contractors move between sites each year. As time passes, the accuracy of the data in relation to employment at specific mines is being eroded. In the near future, this may be addressed by the development of a employee register which should be updated annually from the mine pay-roll lists.

At least one mine, has identified that it has a risk profile in relation to employees leaving the coal industry and subsequently filing claims for injuries sustained while employed in the coal industry. This issue can be addressed by the introduction of exit medicals for persons leaving employment at the mine. From a preventative health perspective, this approach has much to be recommended in that the current statistical information does not capture information on those leaving the industry for health or other reasons.

As the questions asked of the database become more searching, some limitations of the database are becoming apparent. A difficult issue is the compilation of data on the exposure of mine workers to various environments and chemicals. The database records the mine for which the assessment is being conducted, but the extent to which the person maintains employment at that mine is not captured

There is potential for studies to be undertaken in relation to lost time and costs due to injuries and sickness to assess whether or not any health parameters assessed are common. Such findings have a potential to reduce the problems by implementing appropriate risk management programs.

## **CONCLUSIONS**

The tripartite structure of the QCB permits the secure collection of confidential personal health data. This health data is being compiled in an electronic database to allow extensive analysis of the data captured.

In at least some mines, the Nominated Medical Advisers and allied health professionals are using their knowledge to assist the companies undertake more effective risk management by monitoring and careful placement of workers recovering from injury or illness. At a few mines management and the Nominated Medical Advisers are working cooperatively in developing comprehensive health management programs that include both workplace management and voluntary programs to develop healthier lifestyles.

The QCB has structures in place to allow regular enhancement to the current systems as demand warrants. The regular contact with Nominated Medical Advisers is encouraging the development of better standards of health care. Examples of these activities include the introduction of numerous health promotion activities and the revision of health monitoring guidelines for mines rescue personnel.

The continuing confidentiality of the health data held is a priority both on legislative, ethical and moral grounds. The statistical data made available from the health database provides a powerful tool for researchers and health and safety professionals as well as management. If the confidentiality of the health data is seen to be at risk, then quite justifiably, worker support for the collection of the data may evaporate.

As new applications of the data from the health system emerge, new health management programs will be able to be developed. The communication lines established with the mines and unions ensure that these new developments are transferred from mine to mine.

#### **ACKNOWLEDGEMENTS**

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