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**The Secretary  
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Submission for the Senate Inquiry into Occupational Dust Disease

Dear Sir,

I believe that a group of Senators has a deep interest in protecting workers from the effects of occupational disease and injury. The current OHS systems particularly fail to protect workers from the effects of exposures that have slow progressive onset and long latency periods. I would like to submit a submission for the above senate inquiry.

My background is that I am a mining engineer who from 1993 to 2002 coordinated the operations of the coal industry health database that was established by the Queensland Coal Board. I completed a Masters Thesis on the 'Role of Health Surveillance in the Queensland Coal Industry' from QUT in 2000 and up to 2002 completed several research projects using data from the health database. In 2002, the Department of Natural Resources and Mines determined that my services were not essential to their core business and I was given a voluntary early retirement package. Since then, I have published up to six technical papers per year in the topics related to occupational health issues and how management systems might be designed to provide early identification and interventions.

The issues submitted to the Senate Inquiry cover the following:

- 1 Evidence of failure of the current systems
- 2 Development of concepts of safety management systems for occupational exposures
- 3 The development of a national register of workers in hazardous industries,
- 4 Extraction and analysis of death and permanent total disability (early superannuation claims) in workers in hazardous industries,
- 5 Compulsory pre-employment and periodic health assessments of workers in hazardous industries,
- 6 Compulsory exposure monitoring of occupational positions with elevated exposures to hazardous environments.

- 7 Compilation of cumulative exposures of workers across different employers
- 8 Centralised analysis of health assessment and cumulative exposure data
- 9 Development of concepts of acceptable risk from hazardous exposures
- 10 Development of trigger levels to remove at risk individuals from further exposures
- 11 Development of concepts for alternative work programs and re-training
- 12 Competency standards for OHS professionals
- 13 Concepts in assessment tools for competency standards
- 14 System ownership,
- 15 Funding and
- 16 Implementation strategies

## **1 Evidence of failure of the current systems**

Kerr et.al. (1996) indicates that disease related deaths are grossly under-reported and that for every reported occupational related death, there may be five further occupational disorder related deaths that are unreported.

Analysis of data from the Queensland Coal and Oil Shale Superannuation Fund (QCOS) by Ham (2003) explored early superannuation claims which provided a source of death and total permanent disability data. Results showed 51 deaths and 216 cases of total permanent disability that included 4 cases of respiratory disease. Very few of these cases were reported in the Departmental injury statistics but most had some indication that the work environment may have been a contributing factor.

The cost to workers of occupational disease may be millions and to the community many times more. Employers escape paying for most occupational disease and as such the consideration is not one of their key performance indicators.

## **2 Development of concepts of safety management systems for occupational exposures**

Emerging out of the 1994 Moura Mine Disaster, was the need to introduce health and safety legislation based obligations to implement health and safety management systems. This was a step further than the 'duty of care' style legislation that applies to general industry.

The Queensland *Coal Mining Safety and Health Regulation 2001*, requires mines to implement 'safety and health management system'. The regulation also establishes the Coal Mine Workers Health Scheme in sections 44 to 53. This scheme provides for medical practitioners called Nominated Medical Advisers to promote safe operations by assessing workers' fitness to undertake duties without risk to themselves or others. The Scheme also monitors changes in the health of mine workers over time. The key section that relates to hazardous exposures is section 49 which requires

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| 'A coal mine's safety and health management system must provide for periodic monitoring of the level of risk from hazards at the mine that are likely to create an unacceptable level of risk |
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The New South Wales coal industry is subject to the Occupational Health and Safety Act 2000 which establishes broad duty of care on all mine operators. When new regulations are finalized, the industry will also be subject to the *Coal Mining Health and Safety Act 2002*. Sections 20 to

22 refer to the obligations of mine operators to prepare, implement and ensure compliance with health and safety management systems. More specifically Section 23 specifies the *Contents of health and safety management system*

- (1) The purpose of a health and safety management system must be to provide the primary means by which an operator ensures the health, safety and welfare of employees and others at a coal operation and of people directly affected by a coal operation, including people who are not at the coal operation.*
- (2) A health and safety management system for a coal operation must provide:*
- (a) the basis for the identification of hazards, and of the assessment of risks arising from those hazards, by the operator of the coal operation, and*
  - (b) for the development of controls for those risks, and*
  - (c) for the reliable implementation of those controls.*

The most basis element in health and safety management systems for occupational exposures is compliance with exposure standards. Two issues need to be considered, firstly, the exposure standards protect most of the population but not sensitive persons and secondly, numerous industries have difficulty in complying with the standards. Exposure standards are usually based in dose-response epidemiological studies. Ham 2005 argues that when monitoring sensitive persons, variations from the normal response might be determines.

While personal protective equipment is required where exposure limits may be exceeded, a higher level of safety management is also required. Grantham (1994) and the Department of Natural Resources and Mines (Qld, 2004) agree that this includes both health surveillance and enhanced training and supervision. There is little advice in how to manage the risk associated with moderate and high levels of exposures in a safety management / risk assessment framework except to say the health surveillance should be implemented.

In order to place the elevated exposures into to a risk assessment and safety management framework, Ham (2004a) developed concepts for the following:

- Comparable health outcome measures,
- Definition of unacceptable health outcomes,
- Measures for assessing the risk,
- Trigger levels for various interventions in response to rising risk
- Development of interventions and
- Agreement between management and workers on the monitoring, the triggers and interventions.

One of the obstacles in measuring, monitoring and focusing resources on improving occupational health outcomes is the failure to have a suitable benchmark parameter. The Global Burden of Disease approach discussed by Mathers, Vos and Stevenson (1999) draws on an international program that uses a unit called a 'Disability Adjusted Life Year (DALY) as a common measure of harm caused by various diseases and injuries. This unit has two components – years of life lost (YLL) due to premature mortality plus the equivalent of healthy years of life lost due to a disability (YLD). This provides a measure of comparing the human cost of life and quality of life lost due to mine explosions, motor vehicle accidents, stress disorders, cancers and hearing loss. In their study on the general population, cardiovascular disease and cancer were responsible for the highest years of life lost while mental disorders and the nervous system disorders caused the highest disability losses..

Ham 2005 suggests that this burden of disease approach can be used in an occupational health management system to provide triggers for determining exceedence of acceptable risk and triggers for interventions. In practical term, site and individual specific dose-response studies are used to identify susceptible employees and to identify at what point of cumulative exposure or health decline the worker should be more carefully monitored or removed from that specific environment.

### **3 The development of a national register of workers in hazardous industries,**

If the mining industry has learned only one thing out of long and sordid history of silicosis, asbestosis and coal workers pneumoconiosis, it is the need to have a register of workers and to have them undertake pre-employment and periodic health assessments. This does not prevent disease, but permits some understanding of the occurrence of disease and progression of disease in current workers.

Work by Bofinger and Ham (2001) examined the possibility of a Nationals Mining Health Database. The study concluded that the current large mining health databases were very similar in structure and had potential to be combined, especially for research purposes. The existing legislative structures made a central database unlikely.

The research potential was demonstrated in a joint New South Wales Heart Disease risk project.. A feature of this research was the matching of the register of miners with the Deaths Index held by the Australian Institute of Health and Welfare. This has provided an important dataset for further health outcomes research.

### **4 Extraction and analysis of death and permanent total disability (early superannuation claims) in workers in hazardous industries**

Analysis of data from the Queensland Coal and Oil Shale Superannuation Fund (QCOS) by Ham (2003) explored early superannuation claims which provided a source of death and total permanent disability data. Table 2 shows 51 deaths and 216 cases of total permanent disability. Key issues to rise out of the analysis of the QCOS data are:

- Coding of mortality data grossly under-estimates the contribution of nervous and mental disorders to fatalities,
- Fatality data does not account for the wide spread of total permanent disability suffered by mine workers.

**Table 2 QCOS Death and Total Permanent Disability by cause (1998 – 2003)**

| <b>Cause</b>               | <b>Deaths</b> | <b>TPD</b> | <b>Totals</b> | <b>Av. Age</b> |
|----------------------------|---------------|------------|---------------|----------------|
| Cancer                     | 14            | 20         | 34            | 51             |
| Circulatory disease        | 12            | 21         | 33            | 53             |
| Ear disorders              | 0             | 3          | 3             |                |
| Endocrine disorders        | 0             | 3          | 3             |                |
| Infectious diseases        | 0             | 5          | 5             |                |
| Musculo-skeletal disorders | 0             | 83         | 83            | 47             |
| Nervous / mental disorders | 9             | 43         | 52            | 48             |
| Respiratory disease        | 0             | 4          | 4             |                |
| External causes            | 13            | 32         | 45            | 41             |
| Other                      | 3             | 2          | 5             |                |

The importance of this type of dataset is that it is not based on an adversarial legal system and that some form of medical investigation and report is required. The current federal taxation structures for superannuation have the potential to be linked to a hazardous industries registration system that could detect and collate data for early superannuation claims due to death and total permanent disability.

## **5 Compulsory pre-employment and periodic health assessments of workers in hazardous industries,**

Compulsory pre-employment and periodic health assessments of workers in hazardous industries is already well established in mining, heavy industries, construction and transport. A NOHSC guideline recommends health assessment for industries with respiratory health risks.

Joint federal and state legislation may be required to establish some form of interstate standardization and quality assurance on health assessments.

## **6 Compulsory exposure monitoring of occupational positions with elevated exposures to hazardous environments.**

*Western Australian Department of Mines and Petroleum Resources (MPR)*

CONTAM program - (MPR) (2000)

The objectives of the upgraded CONTAM system are:

To provide comparative occupation group, industry sector, and industry exposure data and enable trend analysis of this data;

To provide a reliable basis for future studies into the long-term health effects of exposure of mine workers to atmospheric contaminants, and

To enable accurate assessment of company compliance in the maintenance of acceptable working environments.

To achieve these objectives, the new CONTAM system operates as follows:

‘Each mine will be required to submit a Workforce Survey Form to the MPR when requested.

This form will provide the MPR with information on the number of employees, the type of work they do, and the contaminants they are exposed to.’

The data reported on the Workforce Survey Forms will be used to calculate the minimum sampling requirements (quota) for each mine. Mines will be informed of their quota via Quota Allocation Reports which will be distributed by the MPR. Each mine manager and exploration operation manager will be responsible for ensuring the minimum sampling requirements are met. Sampling results will then be sent to the MPR on a CONTAM Sample Record Sheet, and entered into the CONTAM system;

Sampling results will be used to prepare annual industry reports which will be forwarded onto each mine

## **7 Compilation of cumulative exposures of workers across different employers**

Bofinger (2005) discusses the concepts of Job Exposure Matrices which, when standardized across employers, permits the monitoring of cumulative exposures of individuals across employers or even industries/

## **8 Centralised analysis of health assessment and cumulative exposure data**

Apart from some work in the Western Australian dataset by de Klerk N.H. and Musk W. 1998 and work by Soutar, Hurley and Miller (2004) in the United Kingdom little work has been done

in this fundamentally important field. The dose-response type results of this type of work become important when considering potential adverse impacts and levels of acceptability of risk.

### **9 Development of concepts of acceptable risk from hazardous exposures and trigger levels for interventions**

Ham (2005) explores numerous court cases and dose-response studies to develop concepts of acceptable risk in terms to burden of disease outcomes. A probable adverse health outcome of 0.3 to 0.5 disability adjusted life years lost is arguably a trigger for an intervention to prevent further risk.

### **10 Development of concepts for alternative work programs and re-training**

In the development and operation of the Queensland Coal Workers Health Scheme, medical advisers are required to give employers advice as to whether potential and existing employees are fit for any position, fit for a particular position or fit subject to one or more conditions. This type of system may be applied triggers identifies in cumulative exposure data.

### **11 Competency standards for OHS professionals**

The concepts of the application of burden of disease, industry, site and individual specific does response studies and their use in OHS risk management systems have yet to be more fully developed in terms if detail and specific case studies. A number of demonstration projects need to be developed. This would start in the mining industry where several significant data sets are already in place. Some negotiation would be necessary as this data is considered to be sensitive.

### **12 System ownership**

The current arrangement where employers keep exposure data, doctors have medical data, the States have OHS responsibilities, the Australian Institute of Health and Welfare has the mortality data and there is no central registration, is a major impediment to the develop of OHS management systems of occupational exposures such as silica dust.

### **13 Funding**

Under the current arrangements, the majority of costs associated with health monitoring programs are covered by employers as a cost of engaging and keeping employees. Provided that agreement can be reached on data collection protocols and quality assurance, data can be transmitted electronically into either federal or state based databases at minimal costs. The analysis of similar general population datasets is currently undertaken by existing programs within the Australian Institute of Health and Welfare or the Australian Bureau of statistics. Regional, industry and site specific analysis could be funded by industry and employer research programs on a cost plus margin basis. Several industries already have research budgets for similar industry research and promotion issues.

### **14 Implementation strategies**

Some of the concepts discussed in this submission are need to be more rigorously explored at the PhD or post-doctorate level and placed into demonstration projects to enable industry to appreciate the practical aspects of such a program.

Much of the OHS community still think from a prescriptive legislation and not a risk management perspective. This results in a view that OHS need go no further than compliance with the existing occupational hygiene standards. These standards are based on the assumption

that adverse affects will be suffered even with compliance, but the numbers will be acceptable. I submit that if analysis of change in health with cumulative exposure could identify risk and so reduce effects in sensitive persons, employers have an obligation to implement system to do so. In addition, numerous employers regularly exceed the exposure guidelines and do so without impunity.

The more conservative sections of the corporate world will resist any data sharing that might impinge in industrial relations or short-term productivity of individuals. They will argue the need for employees to make responsible decisions on their own occupational and recreational activities that affect their long-term health. It is probably fair to say that these attitudes from the tobacco and mining industry have led to massive personal and community health costs and retarded education programs in public and occupational health. In the final analysis, the mining industry gave the community asbestosis related disease, but the question needs to be asked 'what systems are now in place for the early identification and management of similar long-term occupational disorders?'. Silicosis related disease is arguably the next generation in wide-spread long-term occupational health disorder.

If I can be of further assistance, please feel free to contact me on email or phone - 07 - 33717568

Regards

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## Attachment 1           References

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