

Summary literature review of health issues related to NSW
mining

Report for the Mines Safety Performance Branch
NSW Department of Primary Industries

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Executive Summary
and
Summary of Priority Health Issues

EXECUTIVE SUMMARY

BACKGROUND

The Wran Mines Safety Review identified, among other things, the relative lack of information on, and prevention activity in relation to, work-related disease affecting NSW miners. This project is intended as an initial step towards addressing this lack by providing literature-based information on disease problems known to be, or likely to be, affecting NSW miners and advice re priorities for further work in this area.

The overall aim of this project was to provide to the NSW Mining Industry Health Working Party a literature-based summary of the health issues relating to all sectors of the NSW mining industry that includes a recommendation on priority issues and a definition of occupational health or boundaries for the Mining Industry Health Working Party's consideration.

The specific aims were to:

- Identify occupational health hazards and issues relevant to all sectors (coal, metalliferous and extractive) of the NSW mining industry.
- Provide advice to Mining Industry Health Working Party members on the priority of each occupational health issue.
- Propose a definition of what constitutes an occupational health issue or boundaries within which the Mining Industry Health Working Party may focus.
- Recommend which of the high priority issues the Mining Industry Health Working Party should consider focussing its resources.

METHODS

This project was primarily based on a review of published information on health issues in the mining industry. A formal review of published New South Wales and Australian-focused literature was undertaken. Where the New South Wales and Australian-based literature was lacking (which was commonly the case), this was supplemented by relevant published literature from other countries, based on the assumption that many of the main health issues will be similar in the mining industries in developed countries. Workers' compensation information was used to provide information on the current burden from various conditions or exposures.

The scope of the report was essentially non-injury health issues in the NSW mining industry – that is, work-related diseases and the exposures that cause them. The approach taken in the report is based primarily on the hazards and secondarily on the conditions they cause.

FINDINGS

It is proposed that the definition of a non-injury health issue for use in the New South Wales mining industry should be essentially that used in TOOCS. That is:

“A work-related non-injury disorder is a condition that usually results from repeated or long term exposure to an agent or event; from a single exposure to an infectious agent; or from multiple or uncertain causes.”

In addition, it is proposed that all disorders arising from body stressing be included under the definition of a non-injury health issue unless the resulting disorder involves a sudden, immediate and easily identifiable acute pathology, such as a ligament tear or rupture, tendon tear or rupture, muscle tear or rupture, or dislocation or fracture. This approach would mean that most cases of back pain and nerve root irritation would be considered to be non-injury health issues.

Finally, the issue of alcohol and drug use should also be considered to fall under the definition of a non-injury health issue.

The intention of this project was for recommendations to be made that proposed a priority order for the non-injury health issues identified. This prioritization was to take into account a number of factors related to the condition and to mining. Unfortunately, most of the available information is not explicitly stratified by most of these factors. For some exposures or conditions, a logical separation can be made on the basis of some of these factors, but there necessarily remains some subjectivity and guesswork in the assessment. Fortunately, for many of the exposures or conditions, the importance of the issue is likely to be similar between sectors. On the basis of the information obtained, the conditions considered in the report were assessed on the basis of their frequency, latency and severity, taking into account some other factors where appropriate. On the basis of this, the issue was rated as High, Medium or Low, and the applicable sector (if a specific one is appropriate) was noted.

High priority exposures and related disorders are proposed to be:

- Noise causing noise-induced hearing loss;
- Vibration causing musculoskeletal disorders;
- Diesel exhaust fumes leading to respiratory disease;
- Hazardous substance exposure causing dermatitis;
- Ergonomic stressors causing musculoskeletal conditions;
- Ergonomic stressors causing back disorders;
- Ergonomic stressors causing fatigue and related disorders
- Psychosocial hazards causing mental disorders; and
- Ultraviolet radiation and skin disease.

The traditional mining-related exposures of concern – silica, coal and, to a lesser extent, asbestos – are now generally well controlled, and the resulting traditional respiratory diseases most associated with mining are almost certainly becoming far less common. Therefore, these exposure probably need to be less of a focus for current and future activity than the exposures and disorders rated more highly. Nevertheless, the disorders can cause severe disability and death, which means that exposure to traditional airborne contaminants will still need to be tightly monitored and controlled. The rating of these exposures and their associated diseases as medium priority does not reflect a lack of importance of the disorders, but the fact that control measures appear to be working well.

Summary of priority health issues

Table 1. Intensity, frequency, latency, severity, priority and key sector for main exposures and conditions

Exposure	Condition	Intensity ¹	Frequency ²	Latency ³	Severity ⁴	Priority ⁵	Key sector ⁶
Noise	Noise-induced hearing loss	High	Common	Long	Medium	High	All
Vibration	Musculoskeletal disorders	High	Common	Medium	Medium	High	All
Diesel exhaust fumes	Bronchitis/emphysema, lung cancer	?Medium	Common	Medium	Medium	High	Underground
Hazardous substance exposure	Dermatitis	?High	Moderate	Short / Medium	Low	High	All
Ergonomic stressors	Musculoskeletal disorders (including back pain)	High	Common	Medium	Medium	High	All
Ergonomic stressors (shift work)	Fatigue and related disorders	?Medium	Common	Short and medium	Medium	High	All
Psychosocial hazards	Mental disorders, drug and alcohol use	Medium	Moderate	Short	Medium	High	All (particularly Remote)
Ultraviolet radiation	Skin cancer, cataracts	Medium	Common	Long	Medium	High	Above ground
Asbestos-related respiratory disease	Asbestosis, lung cancer, mesothelioma	Low	Common	Long	High	Medium	All
Silica-related respiratory disease	Silicosis, lung cancer, ?bronchitis / emphysema	Low	Common	Long	High	Medium	Gold

Exposure	Condition	Intensity ¹	Frequency ²	Latency ³	Severity ⁴	Priority ⁵	Key sector ⁶
Coal dust-related respiratory disease	Coal workers' pneumoconiosis, bronchitis / emphysema	Low	Common	Long	High	Medium	Coal
Hazardous substance exposure and asthma	Asthma	?Medium	?Moderate	Medium	Medium	Medium	All
Welding fumes and respiratory disease	Bronchitis / emphysema, fibrotic lung disease, ?lung cancer	?Low	Occasional	Medium	Medium	Medium	All
Thermal stress	Heat-related illness	Low	Uncommon	Short	Medium	Low	Remote western and underground
Synthetic mineral fibres-related respiratory disease	?Fibrotic lung disease	Low	Uncommon	Long	Medium	Low	All
Other hazardous substance exposure and other respiratory disease	Bronchitis / emphysema	?Low	Occasional	Long	Medium	Low	All
Hazardous substance exposure and other disorders	Various	?Low	Occasional	Various	Medium	Low	All
Biological hazards	Various infections	Low	Uncommon	Short	Low	Low	All
Ionising radiation	Malignancies	Very low	Occasional	Long	High	Low	Minerals sand mining

1: Intensity: the intensity of the exposure

2: Frequency: the frequency of exposure of miners

3: Latency: the period of time between first exposure and development of symptoms

4: Severity: the severity of the disease resulting from the exposure

5: Priority: the assigned priority of the exposure / issue

6: Key sector: the sector(s) for which the exposure / issue is particularly relevant and for which the priority is primarily proposed