PUTTING THE H BACK INTO OHS

'The things that are of great concern to us are what I call the three modern occupational plagues: musculo-skeletal injuries of the cumulative trauma type, indoor environmental problems and occupational stress......The significant problems we have traditionally faced - such as silicosis and lead poisoning - have not gone away, but added to those, now are these emerging problems.'

Dr Donald Miller, NIOSH Director, 1992[1]

Introduction

There is plenty of anecdotal and empirical evidence to suggest that the mining industry has neglected the broader issue of health and well-being in favour of safety and pneumoconiosis.

- A literature search on OHSROM, the major international occupational health and safety data base, showed that there were 11 495 articles posted on mining, 128 256 on health and only 49 on mining and health.

- A review of research undertaken in the Australian mining industry found that apart from dust and respiratory disease research, health issues such as noise, manual handling and access to equipment were relatively infrequently topics of research, despite that fact that these were acknowledged to be problems in the industry[2]. It is interesting to note that in 1996/7 years in the Queensland mining industry there have been more stress claims than claims for lung conditions. In that year there were 32 claims for stress and only 13 claims for lung conditions.

- Eight NSW mining companies were represented in a focus discussion group on health held in June 1998. All health and safety managers, they agreed that health was not really on this industry's agenda. Two underground coal mining companies, four open cut coal mining companies, one zinc and lead mining and smelting operation and one other metalliferous mining company were represented. Comments included: 'there is an obsession with LTIs', '(they) respond to things where there is blood not for things that are long-term', 'today's fatalities are more important that being killed in a few years time'.

- A review of information on health programs collected at this focus group indicated that that health programs in this industry in NSW are poorly aligned to health needs, fragmented and lack goals and strategic planning.

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[1]NIOSH Director Millar speaks out on trends in the health and safety industry. Occupational health and safety, October 1992.
[2]ACA commissioned study.

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Historically the mining industry has shown that it is capable of dealing with health issues. The control of pneumoconiosis is now a classic public health case study. However these conditions are clearly work-related and their causations are relatively straightforward. In some senses, this group has behaved like occupational injuries. The strategies used for this type of illnesses have been the same, or similar as those used for managing occupational injuries. The health issues of today and the future are a more complex interplay of work and personal risk factors. The strategies required to deal with them call on organisational, environmental and individual change. However, the rewards are much greater than just harm minimisation, and could contribute to the industry's efforts to move into a new culture where responsibility for operations is shared between management and workers.

Now is the time for the mining industry to have another look at health. In this presentation I aim to demonstrate:

1. The mining industry is facing a number of significant health problems. Some of them old, unresolved problems, specifically musculo-skeletal disorders and hazardous substances, others of them new, eg ageing and stress associated with work organisation.

2. The current, traditional model of workplace health and safety, which is a **health protection** model, is simplistic and paternalistic. It is fast reaching its use-by date for safety and is inadequate for modern health issues.

3. Recent developments in **health promotion** theory and practice could potentially benefit the industry in three ways:
    -   provide an approach for dealing with the modern health issues
    -   contribute ideas and techniques to the development of safety management systems which recognise that the command control approach to prevention is limited in rapidly changing environments, and where zero injuries are the target
    -   contribute to the creation of a culture in which responsibility for health and productivity are shared.

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Health issues in the mining industry

Views of health and safety managers in NSW mining industry

The focus group held in June 1998 identified the following health issues as important for the industry. They are not in order of priority:

- ageing workforce
  - general population is ageing, therefore workforce population is as well
  - impact of removal of compulsory retirement still to be understood
  - older workers (late 50s) appear to find extended hours a problem. They become financially dependant on working extended hours, so keep accepting overtime. Typically they struggle on for 18 months, often taking sick leave, or having time off on workers compensation, before being medically retired
  - consequences are significant numbers of musculo-skeletal injuries resulting in permanent disability, which appear to be the result of cumulative wear and tear

- lack of fitness for work
  - work now requires periods of physically demanding work interspersed with periods of sedantry work
  - multi-skilling requires people to do new tasks
  - Health &Safety programs have made significant progress in improving equipment and working environment, now left with high incidence of sprains and strains, attributed to poor fitness for the job
  - ageing workforce
  - overweight

- stress associated with downsizing and re-structure
  - stress exit for those who do not get jobs (although noted that generally in this industry there is a reluctance to make stress claims and stress claims are more likely to be denied liability than in other industries)
  - loss of trust amongst those who remain, especially when it comes to rebuilding

- stress associated with work organisation (job design)
  - rostering now means that people work for longer periods but have more days off. People are using those spare days to take second jobs or run their own businesses. When they get tired, or extra demands arise from the second job, they take time off, either as sick leave or on workers compensation
  - shiftwork
  - fly in fly out operations: (two weeks on two weeks off, work seven days, 1 day off, work six nights); 60-70% divorce rate and problems with drug and alcohol abuse unless carefully managed

- hazardous substances

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- as an issue overall; 'workforce feel that they have no control over exposure', 'don't see, can't smell, don't feel most chemicals'
- cancer: concern about clusters...but 'how real are they ...multifactorial, therefore may not be work-related'
- specific hazardous substances: diesel emissions and silica

- noise.

To what extent are these perceptions by experienced health and safety managers supported by other evidence?

Tables 1 and 2 show a breakdown of claims data for occupational diseases for 1996/7 provided by Queensland WorkCover.

Year	Proportion of all claims due to occupational diseases		
	Queensland mining (all) Source: WorkCover	NSW coal mining Source: JCB	National mining (all) Source: Worksafe Australia
1996/7	14%	7%	
1994/5			30%

Table 1: Proportion of all claims due to occupational diseases for mining industry in Queensland, New South Wales and all Australia

Type of occupational disease	Proportion of all claims due to specific types of occupational diseases for 1996/7	
	Queensland all mining	NSW coal mining
Industrial deafness	69%	54%
Musculo-skeletal disorders	9.7%	6.9%
Skin disorders	8.8%	17.4%
Mental health disorders	5.8%	3.8%
Lung disorders	2.3%	1.9%
Other	4.7%	15.4%

Table 2: Proportion of all claims for types of occupational diseases in Queensland and New South Wales for 1996/97

Comments offered on these tables are:

- occupational illnesses are notoriously underreported, however in Queensland mines the rate is very low. For mining nationally the rate was 30% in 1994/5, and for all industries the average was 22% in that year. However at 14% the rate is higher than that of the NSW coal mining industry which was only 7%

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- the disease profile is dominated by industrial deafness, which is responsible for a higher rate than for the all industries average in 1994/95 nationally, which was 10%

- musculo-skeletal disorders, excluding sprains and strains are the second most frequent group. Sprains and strains were responsible for 42% of all claims, and 48% of all injuries. This compares to 62% in the NSW coal mining industry for the same period

- lung conditions are now responsible for few claims, in fact even fewer than stress

- skin disorders are the third most frequent type of condition leading to claims. The proportion and rating was higher in the NSW coal mining industry.

These findings are consistent with the observations of the focus group of health and safety managers in NSW. As well their comments are supported by the literature, discussed below.

Ageing, fitness and musculo-skeletal conditions

The Finnish Institute of Occupational Health has established a reputation as a centre of excellence in the area of the ageing workforce. Table 3 shows a list of factors likely to create Health & Safety problems for older workers. The mining industry has all of them in abundance.

**Table 4: Health and safety problems of particular concern to older workers
Source: Finnish Institute of Occupational Health[3]**

Physical demands

static muscular work
use of muscular strength
lifting and carrying
sudden peak loads

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[3]Wortham S. Is Europe prepared for a graying work force? Safety and Health, January 1995.

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repetitive movements
simultaneously bent and twisted
work postures

Stressful and dangerous environments

dirty and wet
changing and extreme temperatures
falls hazards

Work organisation

role conflicts
supervision
fear of failure and mistake
lack of freedom of choice
time pressure
lack of influence on one's own work
lack of professional development
lack of acknowledgment and appreciation

Although the problem may appear daunting, particularly for the mining industry, avoiding this issue is not going to be an option for any company wanting to operate well into the next century, as the working population ages.

There is some evidence that to date, industry at large has responded to the issue of the ageing workforce by managing it with age discrimination in recessionary periods: reducing the size of the workforce by making older workers redundant[4]. This may not be the case in the mining industry, where redundancies have been based on last in, first out. However health and safety managers reported in the focus group that older miners were finding it difficult to manage the physical demands of the job, especially with longer working hours, and were taking redundancies and medical retirement.

The rate of ageing of the general population has not been reflected in the working population. The extent to which the population of miners is ageing requires clarification. However, whatever the situation is now, in the future younger workers will be in short supply and it is expected the older workers will be viewed differently.

The Finnish Institute acknowledges that physical ability declines with age, but points out that older workers have other advantages: experience, maturity and reliability. One of the myths about older worker is that they have more time off work due to illness. Studies have repeatedly shown that younger workers are absent from work more frequently than older workers[5].

For the mining companies, a possible strategy for the issue of the ageing workforce is:

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[4]Ashton L. Planning for the ageing workforce. Occupational Health, September,1993.
[5]Wortham S, 1995.

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- establish the facts of how rapidly the workforce in this industry is ageing, absolutely and in relation to the rest of the workforce, and what the composition of the workforce is likely to be in the future

- consider what can be done to improve the working environment for older workers, eg adapt training programs, ensure signage is appropriate, continue to work on ergonomic issues

- review mechanisms for matching people to jobs to ensure that the advantages older people have are exploited

- develop integrated health programs for the prevention of musculo-skeletal conditions which tackle both work and non work-related risk factors.

The relationship between age and musculo-skeletal conditions is not straightforward. At a general population level injuries are associated with youthfulness rather than ageing. National injury rates for American men are 33 per 100 for 15-24 year olds, and 25 per 100 for 25-44 year olds. Similarly studies of American soldiers have found that age was associated with decreasing injuries, which has been attributed to the fact that older soldiers are more likely to be of higher rank and therefore more likely to be involved in sedentary work and less exposed to physical hazards. A study of soldiers undertaking basic training, however, in which all participants undertook the same work, found that older workers had a higher injury rate[6].

A study of musculo-skeletal conditions, both work and non-work related, in people employed by Shell in its manufacturing facilities found that those with musculo-skeletal disorders were slightly older than those without, but the difference was not significant[7].

On balance it is this author's view that it is likely that older workers who are performing physically demanding work are at increased risk of musculo-skeletal conditions.

The association between fitness and musculo-skeletal conditions is more straightforward. 'Physically fit people suffer fewer and less severe musculo-skeletal ailments than the physically less fit'[8]. In a study of 10 350 employees of Shell, mentioned above, health surveillance data was used to compare characteristics of the 275 people in this population with low back conditions and 456 people with other musculo-skeletal conditions, either work or non work-related. The variables studies were: age, sex, blood pressure, obesity, smoking and whether the job was physically demanding (note physical fitness was not studied). The risk factors identified by this

[6]Knapik J, Ang P, Reynolds K, Jones B. Physical fitness, age and injury incidence in infantry soldiers. JOM; 1993, 35: 598-603.
[7]Tsai S, Gilstrap E, Cowles S, Waddell L, Ross C. Personal and job characteristics of musculo-skeletal injuries in an industrial population. JOM; 1992, 34 : 606 - 612.
[8]Tsai S et al, 1992.

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study were smoking, obesity and physically demanding job. An interesting finding of the study was that while having a physically demanding job was associated with having a musculo-skeletal condition it was not well associated with making a claim for one. The proportion of cases for which a claim was made was very similar between the group with more physically demanding work and the group with less physically demanding work.

The authors noted that prevention programs had tended to be fragmented in the past, eg initiatives for tackling job characteristics, smoking cessation programs and safe lifting programs. They recommended integrated programs for the prevention of musculo-skeletal disorders and suggested these could comprise:

- job factor evaluation and modification

- increased attention to ergonomics, both on and off the job

- employee education and training in on and off the job injury prevention techniques

- physical fitness, smoking cessation and nutrition programs[9].

Work organisation, stress and health and well-being

There is an increasingly well established connection between occupational stressors and health. For example job satisfaction is a powerful predictor of longevity[10]. Furthermore there are now a number of examples of interventions designed to tackle stress from the perspective of organisational factors, ie improving the way work is organised and managed and individual factors, such increasing coping skills and resilience.

Characteristics of working environments which evoke stress responses include:

- Job insecurity

- Way work is organised
  - workload and pace
  - job control (autonomy)
  - work scheduling (eg shiftwork)
  - job content (extent to which work is meaningful and stimulating)
  - social environment (opportunity to work with other people)
  - physical work environment (noise, dust, fumes, threat of injury can evoke stress responses)

- Way work is managed
  - extent to which supervision is supportive
  - role definition and feedback
  - participative management

[9]Tsai S et al, 1992
[10]O'Toole JO: Work in America. Cambridge, MA, MIT Press, 1974

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–   opportunity for development and promotion[11].

Of these it is known that job insecurity, usually associated with downsizing, is the most potent of stressors.

Many of these stressors can be found in the mining industry. Organisational stressors reported by the focus group of health and safety managers were:

- job insecurity associated with downsizing

- work organisation – shift work (per se) and shift design (extended work hours for physically demanding work in an ageing workforce; longer hours over fewer days leading to people taking second jobs; fly in fly out operations)

- lack of autonomy.

Whilst the industry appears to have been protected from the rush of stress claims and associated heavy costs experienced by the service industries, maybe through its macho culture, it is likely that these stressors are taking their toll on health and productivity nevertheless. The focus group revealed possible consequences of occupational stress, and other health issues, to the mining industry were:

- absenteeism – 'personal health is not seen as a direct cost'. 'it is only an issue if they exceed the sickie limit'

- compensation claims other than for stress-related illness

- binge drinking on days off – 'this is an affluent workforce, they become dependant on their high incomes (golden handcuffs), but their coping strategies may not be great'

- reduced job satisfaction

- impaired industrial relations

- impaired personal health for individuals.

The OHS response to the issue of the quality of the working environment and stress shows how much we relied on individual behavioural change interventions to improve health. Throughout the 70s and 80s the major strategies were stress management workshops and employee assistance programs. It is now recognised that such an approach is ineffective when provided in isolation from strategies to identify and change organisational stressors. Modern occupational stress strategies include the identification

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[11]Ellis N. Workplace health and safety: An Australian approach. Work in progress, to be published by OUP in 2000

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and improvement of factors in the management system, which are having a negative impact on health, well being and productivity.

A Queensland action research project in the coal mining industry which aimed to develop a model for health promotion for use throughout the industry provides an example of how work organisation issues do impact on health, and how in the past they have been put in the too-hard basket.

The project was conducted by a consortium including SIMTARS, Queensland University of Technology and the Queensland Coal Board at the Curragh and Gordonstone coal mines. The project was managed at both the company head office level and at the three sites. However in hindsight the project officers considered that they had not succeeded in adequately involving management at the site level.

The intervention was consistent with best practice principles for health promotion in many areas, especially needs assessment and planning, and has generated a useful model for health promotion in the mining industry. The following was undertaken:

- a situational audit was conducted to assess work culture, the demographics of the workforce, managerial and organisational priorities, and the community context

- workforce health needs were assessed by survey and by appraisal of existing health data bases

- goals were defined and the program was well planned

- existing structures and communications channels were used to develop and implement the program

- the program contained a variety of elements and a multiplicity of strategies were used

- a low key practical evaluation was conducted[12].

However, the program was conducted on the traditional premise that health issues can be divided into those which are work-related, and therefore primarily the responsibility of employers, through the OHS program, and those which are non-work related and therefore primarily the responsibility of employees. That is, it was not an integrated program.

When miners were asked what health issues were most important to them 87% nominated shiftwork, the third most frequently nominated issue after health testing and back care. A shiftwork program was run, but focussed on individual behavioural

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[12] Bofinger C, Parker J, O'Connor, Cliff D, Ham D. Health promotion - a workplace health program for the coal mining industry

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change strategies such as sending information home to families on what they could do to support a shiftworker. The project team missed an opportunity to work with the OHS Committee and management on tackling issues surrounding work organisation, at the same time as providing information and education to workers and families to encourage behavioural change.

Another important organisational stressor is lack of autonomy. Underlying modern interventions for stress and the quality of the working environment is a principle of industrial democracy. Programs tackling work organisation issues are usually introduced by managers who are comfortable with a sharing of responsibility between management and workers, and in fact, they often use health-based interventions as a means of bringing about a more participative culture.

The focus group of health and safety managers from the NSW mining industry held in June this year, commented extensively on the connection between a lack of shared responsibility in the mining industry and the impact this was having on health programs. The management style in the coal mines at least, was described as a command control mentality. Comments illustrating this were that '(workers were encouraged to) leave your brain in the bathhouse' and were 'mothered to death'. The prescriptive nature of the mines legislation was felt to contribute to this. It was felt that there was too much emphasis on employers' responsibilities. This was carried through to OHS, which was a case of obeying the rules. There was scope to emphasise worker responsibilities to workplace and to other people, which it was noted are described in the legislation.

The consequences of this culture, the H&S managers thought, was a reluctance for workers to take responsibility for own health, ie to manage their lifestyles. H&S people expressed frustration that health promotion programs were not well received. It was felt that employers had gone a long way to meet their H&S responsibilities, but that there was resistance to efforts to help employees to improve their own health. For example, a common attitude to efforts to improve fitness is 'mind your own business'.

Hazardous substances

By now some themes should be emerging:

- traditional health and safety programs are poorly equipped to deal with the multi-factorial health and safety issues

- responsibility for health and safety should be shared between management and employees

- integrated (health protection and health promotion) programs are the way of the future.

The focus group identified four issues of concern with regard to hazardous substances. Two of these related to specific substances: diesel emissions and silica. Each of these health issues is related to a single risk factor, which is clearly work-related, so it is not surprising that they have been picked up by traditional OHS programs and that progress

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is being made. But what about the other two issues: lack of awareness and understanding of the management of hazardous substances generally and growing community concern about cancer associated with industrial settings?

The WellWorks project, described below, is an example of an integrated approach, which was taken to address occupational cancer.

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Case study –

WellWorks: an integrated intervention for occupational cancer[13]

The cancer prevention project was a randomised, controlled study conducted in Massachusetts which aimed to investigate whether combining environmental with individual behavioural strategies improved participation by crafts persons and labourers in health promotion activities. This project was one of four in a bigger project which was examining the effectiveness of health promotion interventions targeting nutrition and smoking. The WellWorks cancer prevention project was the only one of these four assessing the effectiveness of a combined health protection and promotion approach.

A list of 160 worksites which met the criteria, below, were selected from a data base:

- 250-2500 workers

- non-English speakers less than 20%

- turnover less than 20%

- probable use of a known or suspected carcinogen.

Of the 160 worksites, 24 (15%) agreed to participate.

The presence of occupational carcinogens in all 24 worksites was later confirmed by an industrial hygienist.

Worksites were randomly assigned into control and intervention groups.

The intervention was run over two years.

The health issues addressed were:

- tobacco control

- exposure to occupational carcinogens

- consumption of dietary fat and fibre.

continued

A joint management-employee advisory committee was established whose role was 'to advise and participate in planning, promotion and implementation of intervention programs'.

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[13]Sorensen G, Soddard A, Ockene JK, Hunt MK, Youngstrom R. Worker participation in an integrated health promotion/healthprotection program: results from the WellWorks project. Health Education Quarterly; 1996, 23 (2): 191 - 203

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The interventions at the organisational and environmental levels were:

- assessment of occupational exposures to carcinogens and advice to management of controls
    - review of company's material safety data sheets
    - standardised walk-through assessment of occupational hazards by an industrial hygienist
    - written and oral reports

- tobacco control
    - advice to management, emphasising smoking bans as policy of choice

- consumption of dietary fat and fibre
    - advice and training on creating environments supportive of healthy eating, particularly in relation to fat and fibre and with regard to selections available in canteens and vending machines.

The joint management-employee advisory committees adapted interventions aimed at individual behavioural change for each of the three health issues from protocols provided by the research team, to suit local requirements. The interventions used varied from worksite to worksite but included: brochures, flyers, posters, self-assessments with feedback, self-help materials, educational campaigns and group educational sessions.

Examples of activities for individual behavioural change undertaken in the 24 workplaces are:

- establishment of a resources centre at the worksite containing written and audio-visual materials on all three health issues

- worksite-wide quiz competition - occupational health jeopardy

- combined tool box sessions (brief meetings on the shop floor) - dietary self-assessments, taste tests, carbon dioxide monitoring, and Q&A session with an industrial hygienist

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- classes or skill building groups for each health issue
  - using traditional OHS communications channels. education on how to read MSDS and the use of personal protective equipment
  - lunchtime discussions on purchasing and preparing foods with lower fat and higher fibre content
  - American Lung Association and American Cancer Society smoking cessation groups
  - hypnotherapy classes.

A survey of a sample of permanent employees working 50% or more of normal weektime was conducted before and after the interventions. An overall response rate of 62% was achieved.

The authors reported their major findings as:

- crafts persons and labourers were less likely than other workers to participate in nutrition and smoking cessation activities but more likely to participate in activities about occupational exposures

- employees (job status and gender controlled) who participated in occupational exposure activities were more likely to participate in nutrition activities than workers not participating in exposure activities

- a trend for a similar association between participating in exposure activities and smoking cessation activities was found but was not statistically significant

- this integrated model, with health protection and health promotion combined, resulted in higher participation rates than traditional designs reported previously in the literature.

Thus it appears that offering programs to control occupational exposures to carcinogens might stimulate crafts persons and labourers to participate in individual behavioural change interventions for cancer.

The finding that participation in any type of intervention was significantly associated with perceived employer changes to reduce exposures to occupational hazards offers a potential explanation for this. The authors suggested that, 'workers who perceive that their employers are willing to make changes to reduce occupational exposures may be more likely to participate in both health protection and health promotion interventions. In other words, when workers perceive that management is introducing environmental changes to reduce worker exposures, measures under management control, workers themselves may be more willing to reduce health risks such as smoking and unhealthy eating, factors within the their control.'

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What has to change to move ahead on health?

New conceptual framework

<u>Traditional workplace health and safety model</u>

Traditionally occupational health and safety programs aim to provide a safe and healthy working environment. Through the hierarchy of control principle, strategies to change the environment are given priority to strategies, which aim to change the behaviour of individual workers.

In terms of health theory, the traditional approach taken in workplace health and safety is one of health protection. The working environment is seen to have factors in it which are harmful. The response to these harmful agents is assumed to be standard, there is no scope for individual variation. The primary purpose of the OHS programs (with regard to prevention anyway) is to identify hazards, assess and control risks. This is seen to be primarily the responsibility of employers. The model can only deal with single risk factors, one by one.

This model has worked well for acute occupational injuries, associated with an instant energy transfer. Reasons that the model has worked well for these are:

- relationship between cause and effect is usually immediate and clear, therefore easy to establish whether injury is work related or not

- in the past when injury rates were high, there was scope for environmental change solutions, ie is those which rely less on behavioural change, and can be implemented within a command/control organisational culture.

With regard to health, the traditional model assumes that all illnesses can be classified as either predominantly work related or not work related. Those which are deemed to be work related are managed by the rules of the OHS program. That is they are considered to be the employers responsibility, to be managed by environmental change. Those which are deemed not work related are managed under the voluntary health promotion in the workplace program. That is they are considered to be the worker' responsibility, to be managed by individual behavioural change strategies.

Health issues with a single, work-related risk factor, even those which are chronic, such as noise, and have long latent periods, such as asbestos, have been managed quite well within this model. For other health issues, with a mixture of work related and non work-related risk factors, eg musculo-skeletal conditions, the model has quite visibly failed. Other health problems for which work is likely to play an important role, and vice versa, have simply been invisible, eg cancer and mental health.
Furthermore, the traditional OHS model is no longer meeting the needs of occupational safety. Employer driven, environmental control strategies have been implemented and injury rates have fallen. Many organisations are now aiming to achieve zero injuries. In this scenario lead indicators are more important than lag. Rather than responding to a high frequency of injuries, the program is driven by attainment of safe work processes and practices. This requires a more active involvement of thinking workers.

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Figure 1, at the back of this paper illustrates the features of the traditional, health protection model of workplace health and safety.

Integrated model of workplace health and safety

In recent years health promotion has been generating some ideas and practices which may prove useful in meeting workplace health and safety's current dilemmas.

Health promotion is a new discipline, and to some extent is still finding its feet. Health promotion has been defined as 'the process of enabling individuals and communities to increase control over the determinants of health and thereby improve their health'[14].

A major difference between health promotion and health protection is that health promotion does not only see health in terms of not being sick. It sees health as a positive state of physical, mental and social well-being. It aims to enhance health, as well as prevent injury and disease. In the Ottawa Charter, a corner stone statement on health promotion, the situation of work is used to illustrate this concept. 'Work and leisure should be a source of health for people. The way society organises work should help create a healthy society. Health promotion generates living and working conditions that are safe, stimulating, satisfying and enjoyable.'[15] As mentioned earlier satisfaction with work is a significant predictor of longevity[16] and socially supportive work groups and positive organisational climates have been demonstrated to be associated with employee well-being[17].

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[14]Parcel G. Presentation QUT Dec 97

[15]Ottawa charter for health promotion. An international conference on health promotion: the move towards a new public health. World Health Organisation, Health and Welfare Canada, Canadian Public Health Association. Nove 17-21, 1986, Ottawa, Ontario, Canada

[16]O'Toole JO: Work in America. Cambridge, MA, MIT Press, 1974 (In Baker et al, Integrated Model)

[17]Stokols D, Pelletier K R, Fielding JF. The ecology of work and health: research and policy directions for the promotion of employee health. Health Education Quarterly; 1996, 23 (2): 137-158

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Perhaps of greater interest to this audience, is not what you can contribute to population health through health promotion, but what health promotion will deliver to you. Of growing interest is the connection between health promotion in the workplace and organisational effectiveness. Developing managers and workers to participate in health promotion programs has been shown to have a positive effect on communications and morale, for example.

Figure 2, at the back of this paper shows the dimensions of an integrated (health protection and health promotion) model.

New programs for organisational health management

There is already quite a lot known about what works and what does not in running integrated organisational health management programs. Important themes are:

- clear goals

- good planning and evaluation

- management commitment

- strategies which operate at multiple levels – community, organisational, environmental and individual

- use of interventions known to be effective.

Table 5 provides a list of conditions that limit the value of health programs.

Table 5: Conditions that limit the effectiveness of health promotion programs: Source Bellingham, 1990[18]

- Program is fragmented

- Program focuses more on activities than results

- Program is geared more to illness prevention than health

- Program lacks the involvement of all levels of employees

- Program underemphases the importance of skills

- Program has insufficient regard for the power of organisational culture on health behaviours

- Program emphasises short-term enthusiasm more than long term commitment

In a brief review of the programs represented at the focus group with health and safety managers, it is apparent that these limitations would apply in general to the health programs in this industry.

Table 6 shows action steps, drawn from three American papers on best practice for an integrated approach to organisational health management, and a project in which a model for health promotion was developed for the coal mining industry in Australia.

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[18]Bellingham R. Debunking the myth of individual health promotion. Occupational medicine: State of the Art Reviews; 1990, 5 (4): 665-675.

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Table 6: Action steps for the 'new' health promotion.

Source Bellingham[19], 1990; Sandroff[20], 1990; Botinger et al[21]; and Stokels[22]

1. Secure management commitment, eg
   – managing health for productivity training
   – identifying leadership forums

2. Establish joint steering committee

3. Plan and carry out initiation
   – undertaken by leadership forum

4. Determining needs and interests, eg
   – needs assessment survey
   – focus groups
   – review of existing health data
   – individual health risk assessments

5. Select issues, develop goals the plan and implement interventions
   – address multiple organisational (cultural), physical environmental and personal health determinants
   – take into account the family and community
   – take an evidence-based approach – use interventions which are known to be effective

6. Evaluate
   – generate a broad range of indicators to measure outcomes, eg
   – worker health and well-being – reduction in illness or injury, perceived quality of work life or job satisfaction
   – cost - workers compensation, absenteeism
   – organisational effectiveness – communications, morale, image in community, productivity, quality.

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[19]Bellingham R, 1990
[20]Sandroff DJ. Meeting the health promotion challenge through a model of shared responsibility. Occupational medicine: State of the Art Reviews; 1990, 5 (4): 677 - 689.
[21]Botinger et al, undated
[22]Stokols D et al, 1996

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Conclusions

1. Traditional workplace health and safety programs currently used by the mining industry are based on a simplistic, paternalistic model of health protection (harm minimisation). This has proved effective for reducing occupational injuries in workplaces with high incidences, and for some occupational illnesses which have characteristics similar to injuries, ie predominate, single risk factor which is work related. However the model has not been successful for multifactorial health issues such as musculo-skeletal disorders, stress and occupational and environmental cancers. Furthermore it is unlikely to continue to be effective even for safety, as workplaces move towards zero injury targets and the focus shifts from managing injury incidence to managing the safety of work processes and practices.

2. Health issues of importance to the mining industry, identified by a focus group of health and safety managers from the industry have been explored. It is concluded that the following are likely to be of relevance in the future:

    -   workforce planning and health management of an ageing workforce

    -   prevention of musculo-skeletal conditions

    -   awareness and understanding of hazardous substances management including occupational and environmental cancer

    -   prevention of stress associated with down sizing and restructure and work scheduling

    -   development of managers and workers for health promotion as one way of moving to a corporate culture where responsibilities are better shared between management and workers.

1. In order to meet the challenge of these emerging health issues, a combination of health protection and health promotion will be required, in which responsibilities are shared between employers and workers for health management, the artificial divide between work and non work related problems is abandoned, and strategies aimed at changing the culture, physical work environment and individual behaviour are combined. A conceptual framework has been proposed showing the differences between the traditional OHS approach, and an integrated organisational health management approach (figures 1 and 2).

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2. Practical examples of interventions. based on the integrated model have been presented for musculo-skeletal disorders (the Shell study and its recommendations for prevention) and occupational cancer (the WellWorks project.

3. Action steps for taking the integrated approach to organisational health management have been proposed, based on the literature. These steps are:

    1. secure management commitment
    2. establish joint steering committee
    3. plan and carry out initiation
    4. determine needs and interests
    5. select issues, develop goals the plan and implement interventions, which:
        - address multiple organisational (cultural), physical environmental and individual health determinants

        - take into account the family and community

        - take an evidence-based approach – use interventions which are known to be effective

    6. evaluate using a broad range of indicators encompassing illness and health, costs and organisational effectiveness.

What you can do when you get back to work to start making the change to an integrated approach to organisational health management

1. Identify all health and safety related programs, including OHS, health promotion, rehabilitation, workers compensation, employee assistance program, health surveillance, first aid. Call a meeting of relevant personnel from each of these areas. Work together to define the goals of the organisational health management program. (What do we want to achieve? Why does this organisation have a health program?)

2. Develop a set of performance indicators for the organisational health management program. These should cover:
    - worker health and well-being – reduction in illness or injury, perceived quality of work life or job satisfaction, health skills

    - cost - workers compensation, absenteeism

    - organisational effectiveness – communications, morale, image in community, productivity, quality.

1. Identify and review all current health programs against:

    - new organisational health management goals (Are they likely to contribute towards these?)

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- evidence of effectiveness and understanding of best practice (Current health surveillance programs and health promotion programs are far from best practice and either need to be changed or dropped.)

- cost benefit (Currently a large investment in secondary prevention for health, may be better to shift some resources to primary prevention.)

1. Do a needs assessment. This could involve: a survey, focus groups, and/or a preview of existing health data.

2. Based on the needs assessment select an issue for which you develop an intervention based on the integrated approach. Information has been presented in this paper on integrated approaches to musculo-skeletal disorders, occupational cancer and stress. However, it will be important that the issues selected for your company relate closely the assessed needs of the workforce.

3. Present revised plan to senior management with recommendations for an integrated approach to organisational health management.

Dr Niki Ellis