The Incident Reporting Database - Local and National issues

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SUMMARY

There has been considerable work undertaken in the safety field in relation to incidents and injuries. This analysis compares the existing systems and provides focus for the emergence of Department of Mines and Energy incident reporting standards in Queensland. Plans are being developed to provide a platform for a national incident reporting system. Participation and education issues are considered key components in ensuring industry ownership of the incident reporting program.

Rigorous incident reporting and analysis should contribute to significant loss reduction and occupational health and safety benefits as -:

- it identifies a clear classification of dangerous incidents;
- it identifies both the frequency and damage attributed to various types of incidents;
- it facilitates a previously unavailable quantification for risk analysis;
- it builds on current injury/incident recording systems with a view to minimising unnecessary administration and duplication;
- it provides ready access by mine operators faced with emergencies or potential emergencies to information on like situations and their management.

1 AIM

The aim of this paper is to provide an information base from which the mining industry in general and the Department of Mines and Energy in particular can make some informed decisions about the development of a comprehensive and effective incident reporting system.

2 SCOPE

The scope of the study is to -:

1 explain why there is a need to develop an incident reporting system;
2 outline the results of previous incident reporting studies,
3 discuss the legislative framework
4 industry reporting formats and trends;
5 review client needs in terms of compiling reports and utilising the results of collated data;

3 HISTORICAL DEVELOPMENT

Since the first printing of Queensland Government Mining Journal, information on dangerous incidents, injuries and fatalities have been published on a regular basis. The reporting of injuries became more systematic with the development of an Australian Standard (AS 1885.1 (1952)revised 1976, 1985 and 1990) in the Reporting of Injuries as adopted by the Queensland mining industry in 1986.

Through the 1980's the New South Wales Coal Inspectorate developed a systematic incident reporting system that allowed reports to be referenced through a one page checklist / incident classification system. This has proved invaluable when collating similar incidents for the purpose of reporting on safety issues that seemed to occur regularly in their coal industry.

In the early 1990's, the Western Australian Department of Mines developed a reporting system that electronically connected field inspectors and mines with the head office in Perth. This used modern computer and communications systems to record information on a wide range of issues including dangerous mine incidents that may or may not have been associated with an injury. Being electronic, this system allowed text based searches to collate similar incidents for the purpose of compiling reports on particular issues.

The Wardens Inquiry into the Moura No.2 Mine disaster in 1994, identified as one of its key recommendations that training in factors that might lead to a similar disaster should be a priority for all persons with responsible positions in coal mines. While much of the questioning and evidence revolved around the perceived failure of the system to adequately report a deteriorating situation, the recommendations stopped short of requiring the establishment of an effective incident reporting system.

In response to an obvious need for the coal industry to develop training programs on hazard management, SIMTARS identified a need to collate relevant information on spontaneous combustion incidents in underground coal mines. Unfortunately, this material was not available in a suitable format. A working group including the Senior Inspector of Coal Mines, a health professional from SIMTARS and the Mining Engineer of the Queensland Coal Board set about collating relevant information from the Coal Inspectors Monthly Reports.

After a preliminary review, an incident classification system was developed, and all the monthly reports back to 1972 were reviewed for underground mines. For open cut mines, reports back to 1990 were reviewed. The analysis of open cut incidents was reported to the industry in 1996 (Ham and Richardson). In this analysis some insight was provided on the relationships between the reported incidents and minor and serious injuries. This study identified the need for the Inspectorate and the industry to cooperate in developing a systematic incident reporting system that was compatible with equivalent systems interstate and internationally.

Up until 1995, the coal industry was using the Lost Time Injury Frequency Rate as their core performance indicator for mining health and safety. From a paper by McDonald (1995) and the Industry Commission Report on Health and Safety (1995), the mining industry's attention was brought to the need to focus on the Class 1 injuries which is where the bulk of the commercial and social costs of injuries lay. The inadequacy of the lost time injury frequency rate was demonstrated in that it ranked minor injuries equally with fatalities.

As a result of this work, the Coal Inspectorate in Queensland, began reporting performance of mines on the basis of a performance index which included both injury frequencies and the average duration rates. The unit of this index is the number of shifts lost per 1 000 000 hours worked.

4 POTENTIAL BENEFITS

As outlined above, the key benefits of developing a comprehensive incident reporting system are -:

1. systematic identification of events that cause or have potential to cause personal injury or financial loss,
2. the collation of dangerous events that occur regularly,
3. the systematic investigation and reporting of incidents at the site level enhances the awareness of mine operators of factors contributing to incidents and injuries,
4. the identification and dissemination of information on events that occur very infrequently but which have a major impact on the continuation of mining businesses,
5. provides data for the development of hazard (risk) analysis studies, and
6. provide a performance indicator that does not require people to be injured as a trigger point for improvement for health and safety systems.

In order for the benefits to be realised by workers, management and the Government, a degree of ownership, participation and feedback is required in relation to all parties. In the same way that the development of Safety Management Plans and hazard analysis are more effectively communicated if there is worker participation, it may be reasonably concluded that a similar awareness can be achieved in tripartite participation in the development and operation of incident reporting systems.

5 PREVIOUS STUDIES

Studies into various types of coal mining incidents have been the subject for investigations and industry health and safety presentations for many years. A few examples include -:

1. 'Overview of Mine Fire Incidents in NSW Coal Mines: 1989 - 1995'
2. South African Coal Mine Explosions (1996)
3. Dragline fire at the Blackwater Mine a Case Study (1996);
4. New Zealand Spontaneous Combustion Case Studies (1996)

The material is published in various formats including publications, journal articles, conference presentations, research papers and more recently the Internet.

For several years, the New South Wales Coal Inspectorate has been producing annual reports of the 'Summary of Reportable Accidents and Dangerous Occurrences. Their Department of Mineral Resources requires incidents to be reported under a classification system that permits dissection by several categories. These include -:

- incident (eg. fatality, serious bodily injury, dangerous occurrence and significant incident);
- fatalities and serious bodily injuries by agent and injury type; and
- dangerous occurrences by mining method and type.

In terms of collating information on incidents in Queensland, the works by Ham and Richardson (1996a and b) clearly identified that in order to collate data in incidents, it is necessary to develop a classification system. Such classification systems are subject to the authors view of health and safety principles and for the most part, are extensions of previous work. In that particular case the classification was developed from the Western Australian and New South Wales systems.

The most common incidents reported in Inspectors Monthly Reports were as follows -:
for underground mines (332 incidents from 1962 to 1995)

- fires (89)
- electrical incidents (66)
- spontaneous combustion (45)
- explosives incidents (30) and
- dangerous gas accumulation / release (19).

For open cut mines (434 incidents from 1990 to 1995)

- explosives incidents (84)
- fires (73)
- electrical incidents (69)
- equipment overturn (64)
- equipment collisions and other loss of control (49) and
- falling / flying objects (18).

The Report on the 'Taxonomy of Accidents in the Coal Mining Industry' by McDonald (1996) contributed some interesting perspective to the structure of incident reporting even though the study focussed only on Class 1 (permanent disabling injuries and fatalities) injuries. The most numerous and severe injuries resulted from human energy ($49.7M) gravitational energy ($45.4M) and machine energy ($28.9M). This study included the concept of special shapes and susceptible (delicate) body parts as being categories of injuries that needed special attention.

6 LEGISLATIVE FRAMEWORK

In Queensland, Section 71 of the Coal Mining Act requires that serious bodily injury and dangerous occurrences are reported. The Mine Manager shall report the following-:

- accidents causing death or serious bodily injury;
- accident with winding arrangement;
- fire;
- inrush of water;
- accidental ignition of gas or dust;
- discovery or outburst of gas and
- fault in electrical circuits.

The Mines Regulation Act section 39 has similar requirements to those in the Coal Mining Act but in addition requires reports of the following -:

- accidental ignition or detonation of explosives;
- uncontrolled movement of mobile equipment; and
- incidents involving dredges or dredge ponds.

Similar legislation for reporting injuries and dangerous occurrences exists in New South Wales under the Coal Mines Regulation Act and more specifically under the 'Notification and Investigation of Accidents and Dangerous Occurrences - (open cut and also underground) Regulations. Additional information collected in New South Wales to that in Queensland includes -:

- self heating of coal strata or other material;
- electric shock or burns to persons;
- injury from blasting; and
- a failure or collapse of any structure such as to endanger person or property.

7 INCIDENT REPORTING - DEPARTMENT OF MINES AND ENERGY

The Department of Mines and Energy has an ongoing program of improvement in health and safety information systems that was established from an Information Value Management Study (5) undertaken in 1994. This study identified an urgent need to upgrade the Lost Time Accident Database that had focussed on the recording and reporting of injury statistics. As the software was upgraded, provision was made in the database structure to allow for the reporting focus to be on incidents as much as the injury sustained.

The Lost Time Accident Database is designed to allow data entry and analysis from both Brisbane and regional offices. The codes, database structure and reporting guidelines are maintained from Brisbane office. Under the supervision of the regional inspectors, office staff enter injury and monthly production data.

From September 1996 to June 1997, a trial was undertaken using a trial Incident Reporting Form. Under the instruction of the Senior Inspector of Coal Mines, all coal mines were requested to complete the form for cable flash incidents. This was to focus on the Departmental concerns on the frequency of cable flash incidents in underground coal mines where there is a significant risk of methane ignitions. While a report is yet to be compiled, preliminary results showed 22 cable flashes occurred in underground coal mines in that 9 month period. Only two mines had no flashes and most of the established longwall mines had either 2 or 3 cable flashes. The majority of cable flashes are associated with shuttle cars in development headings.

8 CURRENT INDUSTRY REPORT FORMS

In order to maximise the level of industry participation in and support for a collective incident reporting system, the development of a collective incident reporting scheme needs industry participation and needs to take into account the current industry best practice in incident reporting. The ACARP Project No 6032 'Incident Reporting and Analysis Project' makes provision for such participation via a number of industry workshops. Two industry reporting forms are compared and contrasted below. For the purpose of the analysis the reporting forms are identified as belonging to companies A and B.

The form of Company A is called a Near Miss/Potential Hazard Form. It requires the details of the 'Near Miss' and recommendations of the person reporting and also the supervisor. Permanent control measures are also reported. A check box distribution list is also provided. The form provides for a scoring sheet for severity (rank 0 to 50), frequency (rank 0 to 25) and probability (rank 0 to 25). These rankings are added to provide a risk evaluation score. Major risks have a score between 61 and 100. An instruction sheet provides information on scoring.

Company B has two incident report forms, an Incident Report for no lost time injury and damage less that $10,000 and a Significant Incident Report for other incidents. The first is a four page report and the second is a generously spaced 10 page report with an additional three pages of instructions. The Incident Report asks for a description of the incident 'detailing the sequence of events'. Information on the contributing factors is also requested. A risk score is required with 60 to 79 being high and 80 to 100 being serious. No scoring sheet is attached. The form provides for information on corrective action to be taken. One page is largely devoted to comments by no less than five levels of management. The Significant Incident Report has 60% of a page devoted to the details of the employee and the rest for details of the equipment and its damage for a total of only 12 entries. The next page is devoted to the investigating committee and its advisers. The description of events is required from the investigators perspective as well as from 'maintenance tests'. Contributing factors and

causes are described from the perspective of behaviours, environment, design and systems. The Corrective Action Sheet identifies action, 'by whom' and date.

9 REVIEW OF CLIENT NEEDS

From the perspective of the community and the work force, there is a strong desire for a workplace free of injuries and occupational diseases and conditions. The corporate perspective may include these but is more easily focussed on such numerical indicators as costs and profits.

An effective incident reporting system has the potential to bring dangerous situations to the attention of the mines inspectorate and mine operators before injuries occur. This permits a pro-active approach to risk management rather than the reactive approach that has been the hall mark of the mining industry. The recent changes in community attitudes have produced a moral and legislated requirement for mine operators to undertake risk analysis and prepare Safety Management Plans. The progress of this work is currently limited by a scarcity of data in relation to the frequency and severity (actual or potential) in dangerous incidents in the mining industry.

From the Governmental perspective it is not difficult to legislate that incidents should be reported, but collective incident reporting needs commitment from the various levels of management in all mining companies. To be meaningful, incident reporting needs to be relatively simple but done to a standard set with the participation of industry and government.

10 CONCLUSIONS

The bulk of the commercial and social costs of injuries is focussed on a small number of permanently disabling injuries and fatalities (Class 1 injuries) The failure of the lost time injury frequency rate as a key performance indicator was demonstrated in that it ranks minor injuries equally with fatalities.

A review of client needs in terms of compiling reports and utilising the results of collated data indicates that an effective incident reporting system may able to provide a performance indicator that does not require people to be injured as a trigger point for improvement for health and safety systems.

Relationships between the reported incidents and injuries both minor and serious, vary according to the type of incident. This may be related to industry's perception of the perceived potential severity risk being reported.

The considerable benefits that may be achieved by an effective incident reporting system include -:

- facilitation of a previously unavailable quantification for risk for hazard analysis; and
- extending current injury/incident recording systems with a view to minimising unnecessary administration and duplication;

The development of Safety Management Plans and hazard analysis are more effectively communicated if there is worker participation. There is a strong argument that an improved awareness can be achieved in tripartite participation in the development and operation of incident reporting systems. For the development of a collective incident reporting system, the mining industry should participate and ensure the project takes into account the current industry best practice in corporate incident reporting.

The Department of Mines and Energy has upgraded software so as to provide the database structure to allow for the reporting focus to be on incidents as well as injuries. The Lost Time Accident Database is designed to allow data entry and analysis from both Brisbane and regional offices.

An effective incident reporting system has the function of bringing potentially dangerous situations to the attention of mine operators before injuries occur. This permits a pro-active approach to risk management and injury prevention

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