THE SAFE OPERATION OF BELT CONVEYOR SYSTEMS IN THE MINING INDUSTRY: THE DEVELOPMENT OF LEGAL PRESCRIPTIONS WITHIN THE SOUTH AFRICAN CONTEXT

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INTRODUCTION

'South Africa has over the years built up a mining industry to be proud of. Our mining engineers and technicians have a high reputation, our equipment is without parallel and conditions of work, wages and social benefits of our miners are being continuously improved. This is a rosy picture, but there is the dark side as well. That is that mining is a hazardous occupation and that in spite of improved machinery, methods, and conditions, accidents continue to occur.'

While the above statement may well have been made today, it is in fact a comment made by the Minister of Mines in 1962[i]. This quotation highlights the fact that the focus on health and safety matters in the mining industry is nothing new.

This paper aims to illustrate the development of legal rules, within the mining industry, to address the risks posed by conveyor belt installations.

As such, it focuses on the historical need for rules dealing with workplace risks in general followed by how the specific rules regarding conveyor belt installations have developed. In terms of dealing with conveyor belt installations specifically, the situation pre- and post-1996 will be dealt with.

WHY LEGISLATE FOR HEALTH AND SAFETY?

'although larger accidents killing a hundred or more prompted safety legislation, ongoing threats, such as small cave-ins, attracted far less regulatory attention, and miners turned to other safety measures, such as befriending the mine rats. Notoriously bigger, meaner and uglier than surface rats, mine rats were thought to sense subtle shifts in the mine workings; if they suddenly scurried away, the miners followed….one observed; "It is a common sight to see a miner feeding half a dozen or more rats from his dinner pail. Frequently they become so tame that they will climb on a miner's lap as he sits at his lunch and crowd around him to receive such portions of his meal as he has taught them to expect."[ii]

- Freese, Barbara. ***Coal – a human history***. London: Arrow Books 2003.

While the description above of mining conditions in the British coal industry around 1898 may not be relevant today, it does contain some of the key issues the mining industry faces in South Africa in the 21st century.

First, it is apparent that legislation, then as now, is written in blood. In other words, the legislature responds to industry trends and norms by implementing or amending legislation on an ongoing basis.

Another point raised in the quotation is the fact that not all potential risks in mining are specifically dealt with in legislation. As illustrated, an example would be conveyor belt installations prior to 1996. Where risks were not specifically regulated, the manager or employer still had the general legal obligation to identify the 'rats' required to enable employees to work safely. This, however, has its own legal implications.

As reasonable persons, it is assumed that the reasonable employer (i.e. a normal employer) would accept that he has a moral obligation to continuously protect his employees against unnecessary hazards that may endanger their health and safety. In a perfect world, if the statement holds to be true, it would not be necessary to have any health and safety legislation. This would be a social as well as a moral norm.

Why then the need for legislative control? While some of the core drivers for the existence of health and safety legislation in South Africa is discussed below, the simple reason that there is legislation creating minimum standards for workplace health and safety, is the same reason laws exist making a person punishable for robbery or housebreaking. We cannot assume that all persons will at all times act in a way which is for the greater good.

1. THE EMPLOYER – EMPLOYEE RELATIONSHIP

Historically, throughout the world, there has been a very close relationship between the rise of employee unionisation and the increase in workplace standards in terms of health and safety legislation. The root of this goes back to the dawn of the industrial revolution. While this is not a purely South African phenomenon, the relationship between the employer and employee union is one which has had a major impact on the political scenery, stretching back as far as the 1880s.

As individual employees had very little or no power against the might of the employer, they banded together in order to collectively protect their rights, including denying the employer their labour by striking.

The first formally organised union in South Africa was established in 1881, when the joiners and woodworkers on the Rand unionised. The reason for the unionisation of skilled labourers and miners was to a large extent due to the fact that skills were scarce, and had to be imported. Most of the skilled labour was imported from Britain, mostly Cornwall or Northumberland in England, and from mines in Scotland and Wales, where they had been unionised. They brought these principles with them to South Africa.[iii]

One of the first examples of organised industrial action in South Africa took place in 1883 in the then Cape Colony. Diamonds had first been discovered in the area of what would later become Kimberley in 1871, which was followed by 'diamond fever', when prospectors from all over the world rushed to the Griekwaland diamond fields.[iv] By the 1880s, most of the prospectors had either disappeared, or were in the employment of big companies which had taken over most of the claims.

The Mining Act of 1883 gave these employers far reaching rights, including the principle of job reservation which remained in the South African mining legislation under the Union Mines and Works Act in 1911.[v] The De Beers Consolidated Mine, in the climate of the legislation, forced all workers, except managers, to work in overalls, and to take off all clothing in change houses at the end of their shifts where they were searched for hidden diamonds. Employees embarked on a strike, demonstrations and looting, calling this 'degrading'. The De Beers company retracted its policy after this, allowing the striking employees to dress in normal work clothing, and to be searched while clothed with shoes removed. Another example of an early strike was the Randfontein Mine strike in 1897.

What most of the early strikers had in common was that they were primarily unhappy with their employment conditions. These strikes were predominantly about money and benefits, including wages. During the course of the latter part of the last century, unions played a very prominent role in the general political landscape. While wages and conditions of work, including health and safety issues, were still seen as grounds for industrial action, trade unions became, to a large extent, politicised beyond pure labour issues.[vi]

Since 1994, while the political nature of trade unions is still evident there has been an increased focus on traditional workplace issues. An example of this was the increased involvement of the trade union movement in matters of workplace health and safety, as can be seen in the newspaper report below.[1]

NUM plans national Gold Fields strike

JOHANNESBURG - The National Union of Mineworkers (NUM) will stage a nationwide strike to protest against the high number of deaths at Gold Fields mines, a spokesman said on Monday.

"Gold Fields is the leading killer this year. It is almost every month that Gold Fields has a fatality and we cannot go on like this," said NUM health and safety spokesman Peter Bailey. The department of Minerals and Energy last week said that Gold Fields, the world's fourth biggest gold producer, had the worst mine death record in the country so far this year.

According to Business Report Gold Fields recorded 47 deaths in the year to last month, including 23 deaths in the first half of this year. Overall, mining deaths were down by 22 percent, but Gold Fields recorded one of its worst years in history, the department said. "There is a total negligence and disregard for safety standards and procedures. Management is not taking health and safety seriously," Bailey told Sapa.

"We will stage a one-day national strike. All Gold Fields operations in South Africa will be affected," he said, adding that a date had yet to be finalised. The mass action would either take place in the last week of July or early August.

Gold Fields spokesman Daniel Tole told Business Report that most deaths were "freak accidents". Some 19 people had died in four such accidents in the first half of this year.

In the past eight years, almost 300 deaths had occurred at Gold Fields mines.[vii]

While there is no doubt that trade unions have historically impacted on government policy, the specific relationship that the trade union movement has with government in South Africa will in future have an even greater impact on health and safety legislation.

2. SOCIETY DEMANDS LEGISLATION

The general public perception is that mining and its related activities are dangerous. While many persons involved in the industry can point out that the mining sector has a better safety record than, for example, the transport industry, the negative perception regarding mining can to some extent be traced back to actual performance.

Historically, South African health and safety performance has been poor. In 1886, the De Beers Kimberley Central Mine had a fatality rate of 150 per thousand persons employed.[viii]

Unfortunately, the public at large come to hear of occupational health and safety matters as a result of major disasters. Tragically this happens often in South Africa's mining industry, a case in point being the Vaal Reefs disaster of May 1995, in which 104 lives were lost as a result of a locomotive crashing through its safety barriers and down the shaft, invoking greater public outcry than any previous modern mine accident.

Top five South African mining disasters[ix]

Mine	Year	Fatalities
Coalbrook	1960	437
Kinross	1986	177
Durban Navigation Collieries	1926	125
Vaal Reefs	1995	104
Natal Navigation Collieries	1923	78

Table 1. Top five South African mining disasters.

The statement is often made that the South African mining legislation is written in blood. If the above table is taken into account, this is easy to understand. Where the public has a certain perception regarding a threat to its well-being (as is the case of mine health and safety), government has to act. In part, this is related to the social contract that is entered into in any democratic form of government. Society gives government power, through an elective process. In return for receiving this political power, government must act on the mandate that they were given for receiving power. This mandate includes providing society with such things as transport infrastructure and medical facilities, but also includes the mandate for the protection of society, including protection at work.

It is interesting to note that while there has been a general improvement in health and safety performance in the mining industry (fatalities in the industry numbered 533 in 1995[x] and 73[xi] in 2016[xii]), the perception of the safety at mines in general is still poor. To a large extent this is driven by the media, as health and safety matters have never before been as prominent in the media as at present. In the not too distant past, media attention was only given to mining disasters with multiple fatalities, whereas even accidents which do not result in fatalities are now deemed newsworthy.

This implies that the threshold of what the broader society sees as acceptable has changed over time. What has remained the same is the fact that government has to act, and a good example of this is the presidential audits requested by then President Mbeki.

President Mbeki in 2007 instructed the then Department of Minerals and Energy to perform audits on the South African mining industry. This followed a spate of mining accidents, including 3 200 mineworkers being trapped underground for almost 48 hours at Harmony Gold's Elandsrust Mine.[xiii] One can only speculate, but the amount of media attention given to this, which potentially could have resulted in one of the

world's biggest mining disasters, forced government to act. It is also widely accepted that this led to the amendment of the Mine Health and Safety Act, 29 of 1996 through the promulgation of the Mine Health and Safety Amendment Bill on 28 May 2009.

3. IF THERE WAS NO ACT

Mine health and safety in South Africa is governed by statute.

As is seen later, the primary source or statute regarding health and safety in mining is contained in the Mine Health and Safety Act. But what if there was no specific act dealing with health and safety and by default, conveyor installations.

The following statement made by Judge Tindall in Barker v Union Government[xiv] may serve as an indication of the possible situation if there were no statute or Act:

"Absolute safety under all circumstances is not guaranteed to the labourer by the contract of employment. The employer is not an insurer. He is not bound to provide the best machinery, nor to provide the best possible methods for its operation, in order to relieve himself from responsibility. He is only required to furnish instrumentalities that are reasonably and ordinarily safe and well adapted to the purpose for which they are designed."

If no laws or legislated rules existed for health and safety in mining, the South African common law would be applicable.

If common law had to be relied upon to regulate mining, it would have a great impact on both the employer and employee, as no specific and easily identifiable obligations would have existed. The technical and specialised nature of mining and its related activities would also have made the application of generic common law principles difficult.

Another issue is the ability of the common law to develop. While development of the common law continuously takes place, the development is driven by our courts. In short, when a court interprets the common law, all other courts are bound by it, until a higher court changes the interpretation. It is easy to understand that this takes time, and that it will be impossible to quickly react to, for example, new technology in mining, or when a disaster has taken place.

4. NORMAL LEGAL REMEDIES ARE NOT ADEQUATE

The contract of employment between an employer and an employee contains those stipulations that regulate the relationship between the two. There were those in the past that held that health and safety matters could be regulated through the contract of employment by stipulating the responsibilities of the employer and the duties of the employee. In theory, this is not impossible.

Where this does come short is in enforcing the stipulations of the employment contract. Normally, where a breach of contract takes place, the party who is in breach may be forced to specific compliance with the terms of the contract. This would not serve to protect the employee where an accident has taken place as a result of the employer's non-compliance with contractual health and safety issues.

The employment contract of the employee itself would not provide him/her with much recourse against his/her employer for an injury sustained at work. He/she could consider bringing a civil claim for the injuries against his employer but to do so he would have to prove, on a balance of probabilities, that his employer's negligence resulted in his injuries.

This is not something the average employee would be able to do. Pursuing a civil remedy could possibly lead to victimisation by the employer, and the prohibitive costs and the lengthy process would further make it an impractical remedy.

Such a scenario would not necessarily motivate the employer to take all reasonable steps to safeguard the health and safety of his employees. Thus, the need for legislation that makes an irresponsible attitude towards workplace health and safety a criminal offence is required.

5. LEGISLATION CREATES STANDARDS

The lack of legislation implies that both employers and employees would have very little guidance in terms of their respective responsibilities. Where legal standards do not exist, decision making on things like training or machinery would be left for the employer to decide upon. This could then be impacted on by the employer's lack of knowledge or experience, which could lead to incorrect decision making, which in turn could lead to workplace accidents and incidents.

In short, legislation creates enforceable standards that are applicable to the employer, employee and third parties, including suppliers and designers. In essence, these legal standards have two separate but linked characteristics.

First, all legal standards are defined. This means that these legal standards are written and published so that all affected parties have knowledge of it, and what is required of them in any given situation. This does not imply that legal standards do not change. It simply implies that where they are amended or changed, a formal process is followed.

Second, all legal standards are subject to measurement. This measurement may take place in a variety of ways, but could be as simple as physically verifying whether sufficient fire extinguishers are present, or whether all trackless mobile machinery operators are licensed. Fundamentally, all laws are standards, the compliance with which is measureable in a court of law.

6. INTERNATIONAL OBLIGATIONS

The five points above are to a degree purely South African in nature. There is also an international motivator for government to ensure the drafting and enforcement of minimum standards for health and safety. As discussed under point 5 above, these standards take the form of legislation.

South Africa is a signatory of the International Labour Organisations Occupational (ILO) Safety and Health Convention, 1981 (which was ratified by South Africa in 2003) and the Occupational Safety and Health in Mines Convention, 1995 (which was ratified in 2000)[xv], among others.

The ILO and its more than 140 member nations meet once a year where specific work sessions are held. Each member state is allowed to send four representatives, two representing government, one organised labour and one to represent employers. These representatives have voting rights (independent of one another), which are used to adopt, among others, conventions. This tripartite principle, government, employers and employees, has also been incorporated into South African health and safety legislation.

Where a convention is adopted by the ILO as a result of the tripartite process, and this is ratified by the member country, it must be adopted as the convention becomes binding on the member nation. The conventions typically contain minimum requirements that have to be incorporated into national legislation. The broad adoption of the health and safety conventions worldwide has made the principles contained in them universal, and there is a lot of commonality in health and safety legislation worldwide. To illustrate how these conventions impact on South African legislation, refer to the two excerpts from the ILO Occupational Safety and Health in Mines Convention, 1995 below:

Article 4

1. The measures for ensuring application of the Convention shall be prescribed by national laws and regulations.

2. Where appropriate, these national laws and regulations shall be supplemented by:

(a) technical standards, guidelines or codes of practice; or

(b) other means of application consistent with national practice,

As identified by the competent authority.

Article 4 places a duty on the member nation to enact national legislation and regulations concerning health and safety, and calls for it to be supplemented by technical standards, guidelines and codes of practice. This is exactly the format followed by the South African legislature.

Article 6, Occupational Safety and Health in Mines Convention, 1995

In taking preventive and protective measures under this Part of the Convention the employer shall assess the risk and deal with it in the following order of priority:

(a) eliminate the risk;

(b) control the risk at source;

(c) minimize the risk by means that include the design of safe work systems; and

(d) in so far as the risk remains, provide for the use of personal protective equipment, having regard to what is reasonable, practicable and feasible, and to good practice and the exercise of due diligence.

Section 11, Mine Health and Safety Act

(2) Every employer, after consulting the health and safety committee at the mine, must determine all measures, including changing the organisation of work and the design of safe systems of work, necessary to-

(a) eliminate any recorded risk;

(b) control the risk at source;

(c) minimise the risk; and

(d) in so far as the risk remains

(i) provide for personal protective equipment; and

(ii) institute a programme to monitor the risk to which employees may be exposed.

As can be seen from the excerpts from Article 6 of the Occupational Safety and Health in Mines Convention and Subsection 2 of Section 11 of the Mine Health and Safety Act, international conventions have a direct impact on South African health and Safety legislation, and strongly influence the form and function of local legislation.

Now that the reasons for the existence of legislation dealing with health and safety matters in the mining industry have been investigated, the specific development thereof will be investigated.

THE HISTORY OF THE DEVELOPMENT OF MINING HEALTH AND SAFETY LEGISLATION IN SOUTH AFRICA

'Mining is inherently dangerous both to life and health. Those who wish to extract anything from under the surface of the earth by digging a hole must be prepared to devote some of their resources to safety. It is an unnatural activity giving rise to unnatural conditions.

But safety measures invariably cost money and the employer must bear its

expenditure. Thus a perpetual conflict of interest arises between employer and employee as to the nature and extent of the safety measures that may be considered reasonably practical and reasonably necessary.'

- Mr. Justice JF Marais. **Report, Marais Commission of Inquiry into the Coalbrook disaster**[xvi]

The Coalbrook mining disaster took place on 21 January 1960, when 437 persons died underground at the Coalbrook North Colliery, approximately 22 km. from Vereeniging, as a result of a roof fall in a section of the mine.

This disaster ranks in the top 10 reported mining disasters in the world in terms of fatalities.

The quote by Justice Marais highlights the potentially antagonistic historic relationship between employer and employee. Traditionally, the employer's major concern is profit, while the employee's major concern is personal benefit (wages, secure employment) and personal wellbeing (health and safety). To balance these two traditionally opposing sets of interest, legislation is implemented to formally manage the relationship between employer and employee in terms of health and safety, through for example the Mine Health and Safety Act.

The Mine Health and Safety Act 29 of 1996 (MHSA) is a complex statute regulating health and safety in the mining industry, dealing, amongst other issues, with the conveyor belt installations. It thus reflects the standards society expects when it comes to workplace health and safety, and is the primary source of legal rules that we are concerned with. It is however not a piece of legislation that developed overnight.

The current health and safety legislation is the culmination of more than 120 years of development. As we have already pointed out, the development was influenced by many factors, ranging from workplace accidents to trade unionism as well as the political climate of the day. In addition, mining, and the development and history of South Africa, is closely intertwined, and mining and minerals have to a large extent formed the country as we know it today.

In order to understand and to be able to interpret the modern legislation, it is important to understand the development of not only the legislation itself, but also of the principles contained in it. As Judge Marais wrote, '(mining)…*is an unnatural activity giving rise to unnatural conditions.'* This has not changed over the past 120 years.

THE HISTORY OF SOUTH AFRICAN MINING LEGISLATION

Small scale mining took place throughout southern Africa during the iron age, although it is commonly accepted that industrialised mining in South Africa had its origins in the Kimberley diamond mines after 1867.

Evidence of earlier organised mining does however, exist. Copper and tin mining activities stretch back to at least 1544, when a Portuguese expedition to Delagoa Bay mentioned that rough refined copper was available for trade. What points to organised mining is the fact that the copper offered for sale in Delagoa originated in the Limpopo province.[xvii]

MINING AND LEGISLATION PRIOR TO 1910

The discovery of the Kimberley Diamond Fields around the mid 1860s brought with it changes which would have a large impact on the nature of South African mining. After the initial discovery, a flood of fortune seekers rushed to the diamond fields from all over the world. Initially, traditional methods of alluvial mining were used which entailed the washing of diamond-carrying sand to extract diamonds. This method was unsophisticated, and required very little specialist knowledge. Over time, the nature of mining started to change. The alluvial diggings became exhausted and mining of the Kimberlite pipes started. This required more skill and capital, and slowly at first, the small claim holder was forced from the diggings. At the same time a severe drought, and several mud slides as a result of mining becoming deeper and deeper, forced most of the marginal claim owners to sell their claims. The last straw came when mining reached the water table, and all mining stopped.[xviii] This meant that only capital rich companies, backed by wealthy financiers, were left able to mine. This was the start of the big mining corporation in South Africa.

It is important to understand the relationship between the big corporations and financiers and the government. The mining industry had a huge impact on the government of the day, and as a result a direct impact on mining legislation. This is illustrated by the fact that Cecil John Rhodes, who founded the De Beers Mining Company in 1880, was elected to the Cape Colony Government in April 1881, and eventually became Prime Minister in 1890.

It was during his time as a member of parliament for the colony that the Cape Colony Mining Act of 1883 was promulgated. The Act dealt almost exclusively with issues that were close to the mine owners' interests and served to protect their investments. (As has been discussed, this gave rise to one of the first examples of industrial action.) The legislation had no reference to health and safety.

The discovery of the world's largest gold reserves in the Zuid Afrikaansche Republic's Heidelberg district in 1886 closely followed the experience of the Cape Colony diamond fields. At first, gold bearing rock was mined where outcrops were visible above the surface. As in the Cape Colony, a rush of prospectors to the Witwatersrand took place. Initially, winning the gold from the ore was relatively straightforward, using simple mechanical means.

Once the surface outcrops were depleted, from around 1895, prospectors and small miners faced the same scenario as in the Cape diamond fields. Underground mining was capital intensive, and specialist underground mining knowledge was required. This led to many of the smaller prospectors selling their claims, and began the process of consolidating the smaller operations into large gold mining operations. The underground mining operations were also exceedingly dangerous, with the

Standard and Diggers' newspaper of 10 June 1899 reporting a 20% mortality rate per annum for underground labour in selected deep mines.[xix]

The final death knell for the independent miners was when underground workings started to strike pyritic quartz ore, sometimes as shallow as 120 feet below the surface. A sense of panic gripped the gold fields, as traditional mechanical methods were not able to free the gold from the hard rock, and the stock market crashed.[xx] The only way to win the gold would be through a very expensive and complicated chlorination process. Unbeknown to other mining operations, a cyanide process was obtained by Wernher, Beit and Company (later to become Rand Mines) which solved the problem, but this was the final act in consolidating the gold industry in South Africa, and left a huge amount of power in the hands of a few.

Other than in the Cape Colony, the mining houses in the Zuid Afrikaansche Republiek (ZAR) did not have a direct means of impacting on government policy – in other words on mining legislation. In fact, there was deep mistrust between the government and the mining houses, as the ZAR saw the mines, owned and managed by foreigners, as a direct threat to its survival. In addition, the labour intensive mining industry competed directly with the farming industry, traditionally the ZAR's backbone, for labour. Because of the mistrust between the two factions, other than in the Cape, legislation was not drafted to protect the mine owners specifically. The first mining legislation in the ZAR was promulgated in 1870, but it, and the laws that followed up to 1898, did not directly concern health and safety, and the mining houses saw these laws as acting against them.

To prove the point, the ZAR Gold Act of 1898 protected the rights of the owner of the land on which mineral rights were discovered. The fact that this right was often enforced at the cost of the foreign prospectors and miners led to further distrust between mines and government.

The mining houses' inability to protect its interests through influencing legislation is perhaps one of the core reasons for the outbreak of the Anglo Boer War in 1899.[xxi]

THE POSITION FROM 1902 TO 1910

Following the British victory in the Anglo Boer War in 1902, one of the colonial administration's prime objectives was to get gold production back to pre-war levels in order to pay for the war and reconstruct the country. To allow for this, several new pieces of legislation were drafted relating to mining, but the central theme of the new legislation was the advancement of mining interests. One example of this relates to the importation of Chinese labourers, who were willing to work for cheaper wages than local labour, in terms of the Labour Importation Ordinance of 1904 and the protection of jobs through implementing a formal colour bar.

Some of the mining legislation implemented in this period in the Transvaal colony includes:

1903 - Mines, Works and Machinery Ordinance – *Replaced the ZAR Gold Act.*

1906 - Mining Regulations – *Prescribed the minimum daily dietary allowance for workers etc.*

As a whole, the years between 1902 and 1910 can be seen as a period where some of the elements found in the modern mining environment were established.

It can however, also be seen as a period where legislation was severely influenced by capital and pure political needs, which meant that health and safety matters were not automatically at the forefront.

LEGISLATION AFTER 1910.

In the period between 1902 and 1910 there was no South Africa as we know it today. Instead, South Africa consisted of four separate colonies, being the Cape, Transvaal, Free State and Natal, each of which was a separate Crown colony under British control.

At the Peace of Vereeniging following the end of the Anglo Boer War, Britain gave the assurance that the ZAR and Free State would have some form of self-governance in the future. Although no time frame for this was stipulated, it coincided with a strong movement in the four colonies (the previous British colonies of the Cape and Natal, and the two new colonies being the Transvaal and the Free State) for some form of union between them. It thus came about that the four British colonies in South Africa were combined in the Union of South Africa on 31 May 1910.

This meant that the four colonies would in future have one government, and that, for the first time, laws would be applicable to all four provinces. Following the Union of South Africa Act of 1910, the growth of mining legislation in the Transvaal following the end of the Anglo Boer war was extended to the three other provinces.

The first example of mine-specific legislation in terms of health and safety in this period was the adoption of the Mines and Works Act of 1911. This was based on a commission report drafted on a study of the Transvaal mining laws published in 1907. This report was almost exactly taken up in the Mines and Works Act, in other words, the post-war Transvaal legislation was extended to the rest of the country.[xxii]

THE MINES AND WORKS ACT, 1911

The Mines and Works Act, as explained above, was based on the legal situation in, and work performed by, the then Transvaal Colony. It was the first health and safety legislation which was applicable to the whole of the Union of South Africa.

Its importance cannot be underestimated, as the Act and its various amendments and Regulations led to the Mine Health and Safety Act as it is in force today, and it remained in force from 1911 to 1991, although some of the regulations made under it are still in place today. In fact, if some of the topics that were addressed by the Act are considered, it is clear that many of the topics are covered by the modern MHSA.

Some of the key issues that were addressed included:

1. Requirements for the appointment of mine managers, shift bosses, engineers etc. The Act further described the competence of the appointees, for example that an engineer as required by the Act had to be in possession of a Government Certificate of Competence (GCC). The first mining engineer (machinery) GCC was awarded on 2 February 1912.

2. The Act specifically regulated hygiene and health in addition to safety. It went so far as to prescribe the minimum dietary requirements in terms of meat and vegetables that employees were to be given per day. In addition to this, the Legislation contained eleven separate regulations on miners' phthisis and ventilation, and by 1918 there were 63.
3. It demanded that a competent person should be appointed to supervise all pressure vessels. The Act further held that all vessels were to be inspected every two years, while hydraulic tests were to be performed every four years.[xxiii] (The first recorded accident involving a pressure vessel in the South African mining industry took place in 1896, when a boiler exploded in Langlaagte. It is not recorded how many fatalities this resulted in.)
4. It required the provision of ambulances and medical aid in case of an accident.[xxiv]
5. The Mines and Works Act, 1911 called for government to appoint a government mining engineer. The GME was directly responsible to the governor general of the Union (comparable to the modern-day president of the Republic of South Africa, and was independent from the then Department of Mines.)
6. Where a trivial provision of either the Act or the regulations was breached by a miner, a fine of £5 was payable by the miner in his personal capacity. Miners were summarily tried in inspectors' courts, chaired by an inspector of mines.[xxv]
7. The regulations did not specifically deal with conveyor belt installations.

To further regulate matters over which the Mines and Works Act had authority, regulations under the Act were promulgated in 1912. This was however, a period of technical advancement, and it was often necessary to amend regulations with little notice, or apparently little thought. As early as 1925, a Mining Regulation Commission was established to investigate the regulations under the Mines and Works Act. It found, inter alia, that some of the regulations were vague and difficult to interpret. The commission's report was duly noted, but no general amendment and simplification of the regulations was made.

So, the body of the regulations kept on growing in a haphazard fashion over the years, in response to both changes in technology and mining methods, as well as in response to mining accidents. It is interesting to note that some of these regulations remain in power today, as even when the Act was ultimately repealed, the regulations remained in power.

A prime example of this is Minerals Act Regulation 2.10.2, initially made under the 1911 Act. It places a duty on the mine manager to not:

'*permit any incompetent or inexperienced workman to be employed on dangerous work, or work upon the proper performance of which the safety of person depends.*'

The 1925 Mining Regulation Commission found the regulation (then under the Mines and Works Act) to be too vague, as it did not describe what competent would be, and felt it left too much discretion to the manager. More than 84 years later, the Leon Commission of 1995 confirmed this, but to date, 92 years later, the regulation still stands.

The original Mines and Works Act was amended in 1926 and in 1956 replaced with a new Mines and Works Act. The regulations also developed over the same period. This was however, not the end of the development of the Mines and Works Act.

Following the Coalbrook Mine disaster in 1960, the Governor General, C.R. Swart, called for a judicial commission to investigate health and safety in the mining industry. The commission was chaired by Justice J.F. Marais, and was tasked with investigating five key points. These specifically included establishing the efficiency of the Mines and Works Act, as well as the efficiency of the Department of Mines (precursor to the DME and later the Department of Mineral Resources) in enforcing the Act and regulations. The judicial commission submitted its report in 1963.

The commission's most important findings included the following:

1. Efforts should be made to increase the confidence of the workforce in the inspectorate.
2. The powers of inspectors to close mines or sections of mines should be more detailed in the Act. As with the current Section 54 of the Mine Health and Safety Act, the Mines and Works Act allowed for inspectors to close workplaces, although no rules of practice had been implemented. As such, mine closures were extremely rare. During the Marais commission, the Chamber of Mines admitted that mine closures were sometimes necessary, but should not be implemented where this would affect production.
3. The commission's proposal was that an inspector would have the power of mine closure, and only where this would not have far reaching effects for the economy. Where a mine closure took place, an appeal by the mine would immediately suspend the order while the appeal was being heard, unless the inspector was of the opinion that suspending the closure would unnecessarily endanger people, in which case the government mining engineer would have to agree for the closure to come into effect. If the procedure for mine closure is taken into account, it is quite clear why mine closures were uncommon.
4. The procedures regarding inquiries and investigations should be simplified.
5. The salaries of inspectorate staff should be addressed to ensure the retention and sourcing of competent staff members, as there was direct competition with the mining industry for scarce skills.

It is important to note that some of the issues highlighted by the Marais commission remain valid to this day.

IMPACT OF THE MINE AND WORKS ACT ON CONVEYOR BELT INSTALLATIONS

The Mines and Works Act and Regulations, in neither its 1911 or 1956 guises, dealt with conveyor belt installations to the same extent as the Mine Health and Safety Act regulations do today.

Instead, an addition to the basic requirements for conveyors in Regulation 10, it also dealt with conveyor belt installations broadly, viewing it as machinery, implying that all prescriptions regarding machinery would also apply to individual conveyor belt installations in total but also with respect to its individual components.

The Act, in Section 1 (viii) defined machinery as:

'any engine, boiler or appliance or combination of appliances which is used or intended to be used for the generating, developing, receiving, storing, converting or transforming any form of power or energy or conveying persons, material or mineral and which is situated at a mine or works'

In addition to the general regulations applicable to machinery, some specific issues were to be considered.

1. The appointed manager and engineer for the specific mine carried the responsibility for ensuring compliance with the Act and regulations applicable to the conveyor belt installation. The modern approach is to place the responsibility for complying with conveyor belt installation-related legal prescriptions on the employer.

2. While not specific to only conveyor belt installations, the issue of dust liberation and control was addressed in Regulation 10.2.1, which referred to dust exposures as a result of the 'moving or handling' of minerals.

3. The Mines and Works Act Regulations, under 11.4, dealt with belt conveyors. This included the duty placed on the manager to enforce a code of safety practice. This could be seen as the precursor to the latter day requirement for mandatory codes of practice, although no requirement of this to be based on a guideline or for submission to the Department of Mineral Resources or its equivalent was considered. It had to deal with the installation, operation, maintenance and patrolling of the belt conveyor system.

4. It further dealt with fire-fighting requirements along the length of the conveyor and at the driving head. It did not deal with the specific nature of the equipment, save for the requirement that it be for immediate use.

5. It called for the fitting of a device to stop belt operation. This had to be operable from the entire length of the installation, unless an attendant was placed at the driving head in which case steps for signalling to the driving head would suffice.

6. Where belt conveyor installations were used in sequence, interlocking devices were to be put in place.

7. In coal mines, specific prescriptions further applied. Conveyor belts were to be fire-resistant **or** incombustible, undefined measures were to be taken to prevent the build-up of coal or coal dust to prevent ignition, and devices were to be installed to stop drive in case of broken or jammed belts or where excessive slipping takes place.

MINES AND WORKS ACT CONCLUSION

The Mines and Works Act with reference to both the 1911 and 1956 versions spans a period of tremendous growth in the mining industry. This growth may be categorised with reference to both the sheer number of persons involved in the industry (101, 524 in 1906[xxvi] versus 623 129 in 1990[xxvii]) as well as the massive changes in technology and mining methods over this period.

Some of the elements of regulation found in the current legal requirements regarding conveyor belt installations may be identified, but even a casual study of the Mines and Works Act Regulation Chapter 11 shows that while some regulation is evident, and possibly somewhat familiar, the requirements are vague. These include:

1. Lack of clearly defined standards, e.g. for fire resistant conveyor belting used in coal mining operations.
2. The undefined nature of the required 'code of safety practice'.
3. Unspecified nature of fire-fighting equipment required.

The foundations were however, laid for greater future regulation.

MINERALS ACT, 1991

The Minerals Act was an attempt by government to codify all the different pieces of mining legislation into one enabling statute. At the time, it was government policy to deregulate and privatise government institutions, in essence to devolve responsibility to the lowest level. When the Minerals Act was thus promulgated in 1991, the main reason behind the exercise was not to improve mine health and safety, or because the Mines and Works Act was deemed to be outmoded, but to reorganise and economise government administration of mining in South Africa.

As a result of the Minerals Act of 1991, 29 Acts were completely repealed, while six others were partially repealed. Fourteen inspectorate offices were rationalised into nine, and the fourteen mining commissioners' offices were incorporated into the nine inspectorate offices.[xxviii]

Primary Goal

The Mines and Works Act, No 27 of 1956 was repealed by the Minerals Act on 1 January 1992 with the exception of *Section 9*, which was a restriction on Sunday work and other relevant definitions. The Minerals Act did not, however, repeal all the regulations made in terms of the Mines and Works Act.

The stated aim of the Minerals Act was threefold:

1. To regulate the prospecting for, and optimal use of minerals
2. To provide for health and safety in mines and works
3. To regulate the orderly use and rehabilitation of land.

It was argued that points 1 and 3 should be included in the Act, as they also concerned the health and safety of persons. It should however be plain to see that this is a stretch, as was borne out in practice. Of the 70 sections of the Act, only 22 related to safety. Another major shortcoming of the Act was the lack of authoritative rules on occupational health. Although the word health is continuously used, it is mostly used as interchangeable with safety, as in health and safety. The Act contained no specific provisions for managing health issues.

In addition to the enabling Act, the Mines and Works Act regulations (some of which dated to the old pre-1911 Transvaal Colony ordinances) were incorporated under the Minerals Act. To some extent then, at least from a day to day perspective, there was continuation in the legal rules regulating mining, despite the shortcomings of the regulations as has already been pointed out.

Key Developments under the Minerals Act

Although the Minerals Act faced criticism from some quarters, it did bring some changes which were important for the later Mines Health and Safety Act.

1. Individual liability

The concept of individual liability for workplace incidents was created by the Mines and Works Act.

The owner of the mine or works could appoint a manager in writing in terms of *Regulation 2.5.1*. Regulation 2.5.1 stated that each mine and works should be worked under a manager who would be responsible for the control, management and direction of the mine or works. Insofar as responsibility for health and safety was concerned, the manager had the following functions:

- He had to take all reasonable measures to comply with and enforce the requirements of the Minerals Act as well as with the orders given by inspectors in the interests of health and safety and to ensure that employees observed them.
- He had to take all reasonable measures to provide for the safety and proper discipline of the employees.
- He had to prevent the employment of incompetent workmen for dangerous work. (This provision dated from the 1911 Act).

Although the duties and responsibilities of the mine manager were not a drastic departure from the Mines and Works Act, the responsibilities of the manager were now contained in the enabling legislation itself in terms of Section 31, and were more strongly formulated than previously under the regulations alone. Section 31 formed part of Chapter 5 of the Minerals Act, which was subsequently repealed by the Mine Health and Safety Act.

The Mines and Works Act also provided for the appointment of subordinate managers in terms of *Regulation 2.6.1*. The Minerals Act retained this provision. A subordinate manager is appointed to assist the manager in the control, management and direction of a mine or works and has the same responsibilities as the manager, but for a reduced area of responsibility.

The manager's responsibilities were redefined with the enactment of the Minerals Act, as were the responsibilities of a subordinate manager. This was done to demonstrate that more was expected from management with regard to occupational health and safety.

Notwithstanding the above, the engineer in charge was effectively the person held responsible for what occurred at a workplace, for example where an accident occurred during the maintenance of a conveyor belt installation. The reasoning behind this was that by virtue of his background, he is the most competent person to explain, for example, why a particular installation failed. Once again this was carried over from the 1911 Act.

The problem therefore was that the manager still controlled the provision of health and safety resources, and because the inspectorate did not really hold him accountable, he was, invariably, not inspired to be generous in the provision of such resources. The reformulation of the manager’s duties and responsibilities, as mentioned above, was intended to address this issue.

2. Administration

The government mining engineer and assistant government mining engineer, inspectors of mines and inspectors of machinery supervised the Mines and Works Act. The inspectors were the officials that practically administered and policed the Act in the workplace.

They had wide ranging powers and even had jurisdiction, under certain circumstances, to convict and sentence contraveners of regulations and/or special rules. The inspector could, however, impose a fine only and not a jail sentence. The employer had the right to withhold payment of wages from a contravener who failed to pay his fine, and to pay the amount over to the inspector. There was a special provision requiring an inspector to pay all fines received over to the State Revenue Fund.

The Minerals Act was, in turn, administered by the director-general of the Department of Mineral and Energy Affairs. The application of the Act's provisions was done under the direction of, and was subject to, the instructions of a deputy director (generally known as the government mining engineer).

Regional directors were appointed on a regional basis and were to a great extent autonomous in their regions. They had a multitude of functions and were assisted by a regional mining engineer and other officers.

3. Offences and Penalties

The Mines and Works Act held a person guilty of an offence if he, by his act or his omission, caused serious bodily injury to any other person. The maximum fine was R1 000 and only if he failed to pay this fine, could he be sentenced to jail for a period not exceeding twenty four months; i.e. a jail sentence was not really a threat as long as he had enough funds to pay the R1 000 fine.

The Minerals Act had a similar provision although it added the requirement of negligence. The fine was R15 000 initially, but the Minerals Amendment Act did away with these limits. What is important though, is that the Minerals Act provided that a jail sentence of two years could be imposed without the option of first paying a fine.

THE LEON COMMISSION.

Chapter 5 of the Minerals Act regulated health and safety in the mining industry. The Minerals Act elicited a lot of response from both industry and organised labour. It was felt that Chapter 5 did not deal with the health and safety issue sufficiently. Certainly, the frequency and seriousness of mining disasters seemed to support this view. In particular, the Merriespruit disaster of 1994, in which the wall of a slimes dam collapsed, moved the government to appoint a commission of inquiry into health and safety in the mining industry. This commission was under the chairmanship of Mr Justice R.N. Leon.

The commission's mandate was to investigate all aspects of the legal regulation of health and safety in the mining industry as defined in the Minerals Act No 50 of 1991, and it subsequently made recommendations to the state president on possible improvements to existing regulatory legislation and the implementation of these changes in the light of prevailing circumstances within the mining industry.

The importance of the Leon Commission cannot be overestimated. It has been referred to as the most far reaching and important commission in terms of health and safety held in South Africa,[xxix] since it not only had a direct bearing on the drafting of the Mine Health and Safety Act, but contains implications that will affect mining health and safety legislation for some time to come.

The Leon Commission on Safety and Health in the South African Mining Industry started its hearings on 18 July 1994. In reaching its conclusions, the commission made the following findings:

1. The commission found that over 69 000 mineworkers had died in the period between 1900 and 1994, and more than a million were seriously injured.
2. A worker who spends 20 years working underground in a gold mine faces a 1 in 30 chance of being injured or killed.
3. The commission found the regulations pertaining to training to be vague and unclear.

4. It referred to the Minerals Act as 'clearly inadequate'.
5. Mining legislation in South Africa was not adequately enforced, and very few examples of senior management being prosecuted existed.
6. The commission commented negatively on safety management systems, saying these systems had not reduced the fatality rate in mining. The commission listed examples of mines with high safety gradings which had suffered major disasters, and had reported that it had no basis for recommending that these systems be used.
7. It commented on the lack of senior management legal responsibility because of the wording of the Act, specifically at the level below owner but above mine manager.
8. The commission deemed the principle of self-regulation, as proposed by the Chamber of Mines, as unacceptable.
9. The Minerals Act and its regulations were not conducive to ease of understanding.
10. The inspectorate was underfunded and under resourced.

From the above examples it is clear that the situation regarding the legislation and the enforcement thereof was deemed to be unacceptable. This is amply illustrated by one submission to the commission, with which it agreed.

'If one reads the regulations, and indeed the Act itself, if becomes quite clear that what one has, is a collection of regulations which have been inserted from time to time, in order to cope with particular problems and with very little attention to the overall objectives of the Act.

One then gets lost in the maze of regulations which have no particular order. So the most important steps in ameliorating harm or hazards are not listed in order of importance, they are simply listed in the order in which they were thought of and at some stage or another, there has got to be an overall review of those regulations and the Act so that one does not lose the primary objectives in the minutia of the casuistic inclusions'. [xxx]

1. Recommendations of the commission

The recommendations of the commission not only related to amendments to be made in the Minerals Act 50 of 1991, but also to the drafting of a new Act. The recommendations were as follows:

1. A new Act, devoted to health and safety in the mining industry only, should be drafted.
2. The existing regulations under the supervision of the Mining Regulation Advisory Committee (MRAC) should be upgraded.

3. New regulations should be drafted concerning the following:
    - Accidents caused by falls of ground
    - Accidents from haulage and transport underground
    - Occupational health
    - Coal mine explosions and respirable dust
    - Restructuring of the Department of Mineral and Energy Affairs.
4. Regulations dealing with occupational health in mines should be promulgated as soon as possible. These regulations require, inter alia, that:
    - the mine owners provide medical surveillance for diseases on the mine
    - the mine manager ensures that the owner's surveillance scheme is properly operated, and that adequate records are kept, and supplied (subject to medical ethics).
5. A Mine Health and Safety Council must be established to advise the minister on all matters relating to health and safety in mines, the relevant legislation and the enforcement thereof.
6. The owner must appoint those persons slotting in between the manager and the owner in the hierarchy, e.g. consulting engineers.
7. A system of health and safety representatives should be established at each mine, with at least one representative per 100 non-managerial employees. The manager, in consultation with the workforce, should facilitate their election and define the workplaces to be covered.
8. One or more mine health and safety committees should be established by the manager at each mine, after consultation with workplace representatives.
9. The mining industry should develop a methodology for assessing the most serious hazards at the workplace.

Drafting of the New Act

During 1995 the Parliamentary Mineral and Energy Affairs Portfolio Committee supported the recommendation for the drafting of a new Act and shortly thereafter the cabinet approved the implementation of this recommendation.

The Mine Health and Safety Bill was subsequently drafted by Mining Regulation Advisory Committee (MRAC). MRAC is a tripartite body comprising of members of the state, employers and employees that was established on a voluntary basis. The main objects of the bill were to promote and protect the health and safety of all persons employed or working at mines.

The Mine Health and Safety Act was assented to on 30 May 1996 and commenced on 15 January 1997.

The Act is dedicated solely to health and safety within the mining industry, which was not the case with the amended Minerals Act preceding it.

Current legal Prescriptions for Conveyor Belt Installations

Where conveyor belt Installations are concerned, it has been shown that the trend internationally is for a reduction in the fatal injury frequency rate associated with conveyor belt use. This has not been part of the South African experience, and it has been shown that conveyor belt installations have historically contributed to a large proportion of mining accidents, with 37% of all machinery related fatalities between 1988 and 1992 being contributed to tail pulleys.[xxxi]

As a result, there has been an increased focus on bulk materials handling, and conveyor belt installations specifically, ultimately leading to Regulation 8.9 of the Mine Health and Safety Act Regulations dealing specifically with conveyor belts. This was Gazetted in 2008 under Chapter 8 of the Mine Health and Safety Act Regulations. It is topical to note that conveyor belt installations are dealt with under Chapter 8, Machinery and Equipment. It should be obvious that conveyor belt installations and their components would still fall within the definition of machinery in Section 102 of the Act, and thus subject to the general provisions applicable to machinery.

Mine Health and Safety Act Regulations

One of the difficulties in dealing with the Mine Health and Safety Act is the fact that two sets of regulations have to be consulted, being the Mine Health and Safety Act Regulations and the Mines and Works Act Regulations which were not repealed and are still applicable in terms of Schedule 4.

The existence of two sets of regulations applying to the mining environment is a result of the history of the development of the mining legislation, as has been discussed elsewhere in this paper. When the Minerals Act replaced the Mines and Works Act in 1991, it adopted the Mines and Works Act Regulations and when it in turn was replaced with the Mine Health and Safety Act in 1996, Schedule 4 of the new Act adopted the previous regulations. A recurring theme since 1997 has been the repeal of old regulations, and the making of new regulations dealing with the same topic under the Mine Health and Safety Act. This process has been slow, and while ongoing, it leads to a situation where both old and new regulations remain in force.

The fact that Mine Health and Safety Act Regulation Chapter 8.9 now specifically deals with conveyor belt installations should be welcomed, but it cannot be dealt with in isolation. The following legal prescriptions would still have to be considered:

Mine Health and Safety Act Regulations	Mines and Works Act Regulations
Chapter 5– Fires and Explosions	Chapter 3 – General Provisions
Chapter 8 – Machinery and Equipment	Chapter 4 – Workmen
Chapter 10.1 – Hazardous Locations	Chapter 5 – Surface Protection
Chapter 10.3 – Draw Points, Tipping Points, Rock Passes and Box Fronts	Chapter 20 – Machinery: Special Safety Measures
	Chapter 21 – Machinery

Table 2. Legal prescriptions for consideration.

Regulation Chapter 8.9 was initially published under GNR 93 of 2008. This was not the first example of conveyor belt installations being dealt with in regulations (See the Mines and Works Act Regulations, 1956 above) but it introduced several topics and controls which were not dealt with before, but which could historically have been considered best practice.

Although the regulations should be seen as a step in the right direction, they were not without criticism, with serious issues being raised by the industry regarding amongst other issues, the practicality thereof. The initial 2008 regulations were amended by GNR 622 of 2013. This updated the original regulations, to a large extent catering to the concerns raised by the industry.

The following table compares the original Mines and Works Act Regulations, the 2008 regulations and the 2013 amendments by highlighting some of the more pertinent prescriptions.

Mines and Works Act Regulations	GNR 93 (2008)	GNR 622 (2013)
	Prohibits the cleaning of the conveyor belt installation while it is in motion.	Prohibits the cleaning of *designated sections* while the conveyor installation is in motion (save for using pressurised water)
	Requires locking out of power supplies during maintenance and related cleaning of spillage etc.	Requires locking out of all sources of stored energy and locking out after isolation, allows for training and alignment of belts while in motion.
Required a code of safety practice to be drafted.	Required procedure for splicing, joining and repairing of belts, including use of	Requires written procedures on: training and alignment of belts, cleaning of belts outside

Mines and Works Act Regulations	**GNR 93 (2008)**	**GNR 622 (2013)**
	chemicals	of designated sections, procedure for splicing, joining and repairing including use of chemicals.
Belt to be fitted with devices to stop operation **or** provide for means to communicate with an attendant who could stop belt.	Belt to be fitted along entire length with a device to stop operation wherever access to the belt is possible.	Belt to be fitted along entire length with a device to stop operation wherever access to the belt is possible.
Required fire resistant or incombustible belts in coal mines.	Requires steps to prevent exposure to flames, fumes or smoke, including measures to detect start and spread of conveyor belt installation fires.	Requires steps to prevent exposure to flames, fumes or smoke, including measures to detect start and spread of conveyor belt installation fires.
	Required testing of conveyor belt installation safety devices are tested weekly (pull cords and take up devices)	Required testing of safety devices in designated sections every week, 3 months where the devices are outside of the designated areas and immediately after belt extension or shortening.
Interlocking devices to be put in place where conveyors operate in sequence.	Where conveyor belt installations are operated in series, sequence interlocking is to be provided to prevent feeding onto stopped belts and prevent start up until next belt is in motion.	Where conveyor belt installations are operated in series, sequence interlocking is to be provided to prevent feeding onto stopped belts and prevent start up until next belt is in motion, *except where maintenance procedures require independent operation.*

Table 3. Comparison of regulations and amendments.

In general, the amendments made to the Mine Health and Safety Act Regulations conveyor requirements since 2013 should be seen as a positive. It is submitted that this is an example of positive interaction by the relevant parties in the mining industry, being government, organised labour, employers and the conveyor industry itself under the auspices of the Conveyor Manufacturers Association.

CONCLUSION

The regulation of the safe use of belt conveyor systems in the South African mining industry has a history as old as the mining industry in South Africa itself.

As such it has kept pace with not only the development of conveyor technology, but with changes to the fabric of South African life itself.

Legal regulation has gone through phases of development based on colonial wars, with pro mining and pro landowner stances facing off. It has been influenced by the rise of trade unionism and South Africa's re-emergence in the international arena through the signing of International Labour Organisation treaties. It has been influenced firstly by a parochial, prescriptive approach and then, after the Leon Commission's findings, by a more self-regulatory approach.

Where does the mining industry then find itself in 2017 regarding the legal rules applicable to the safe use of conveyor belt installations? In short, it is an amalgam of legal approaches. One aspect illustrates the principles of self-regulation as found in the Mine Health and Safety Act, where the focus is on following a risk-based approach and acting '*as far as is reasonably practicable',* whatever that may be in an individual mine's context.

This is further reinforced in Section 9 of the Act, where Subsection 2 requires each mine to draft codes of practice where, ultimately, instructed to do so by the DMR. The content of the mandatory codes of practice are still within the authority of the mine, thus to an extent still self-regulatory. A direct example with a bearing on belt conveyors is the Guideline for Mandatory Code of Practice for the Safe Use of Conveyor Belt Installations, published on 19 December 2014.[xxxii]

This self-regulatory approach, while not formally discarded by the authorities, has of late been tempered. This comes against a perception amongst those tasked with enforcing the law in the mining industry that the industry has not played its part in reducing the fatality rate in mining. This has seen a trend of prescriptive regulation through the promulgation of regulations under the Act. The latest regulations all share a trend of being prescriptive, with the Trackless Mobile Machinery Regulations approach to proximity detection devices being a case in point.

It would also appear that the industry itself has identified a need for more specific regulation. The Mine Health and Safety Act specifically references 'having regard to the state of knowledge reasonably available regarding a hazard or risk'. The CMA's Guideline to Safety Around Belt Conveyors[xxxiii] may not be a promulgated statute, but it is given legal working by fulfilling the definition of 'reasonably practicable'.

In the end the debate regarding whether a self-regulatory or prescriptive system is preferable is moot. Industry must comply with the laws applicable to it.

If the end goal of implementing and enforcing legislation is the safeguarding of employees on mines, an investigation of fatality statistics through the years is self-explanatory. This can be seen from the following table:

Year	Combined surface and underground fatalities
1911	906
1930	584[xxxiv]
1993	578[xxxv]
2016	73[xxxvi]

Table 4. Fatality statistics.

While the table does not take into account the reduction of employment in the industry or the drive towards greater mechanisation, it clearly shows a vast improvement. It would be short sighted to exclude the voluntary work done by employers, employees and the conveyor industry, but there can be no denying that legal rules have played a role in the reduction of the incidences of fatalities in the mining industry.

One fatality, however, is still one too many!

REFERENCES

[i] Mines and Works Act, 1956, Lex Patria

[ii] Freese, Barbara. Coal – a human history. London: Arrow Books 2003.

[iii] Callinicos, Lulli. Gold and Workers, 1886 – 1924. Ohio: Ohio University Press

[iv] Meredith, Martin. Diamonds, Gold and War. Johannesburg: Jonathan Ball Publishers(Pty.) Ltd.

[v] Meredith, Martin. Diamonds, gold and War. Johannesburg: Jonathan Ball Publishers(Pty.) Ltd.

[vi] Wood, Geoffrey. South African Trade Unions in a Time of Adjustment.Paper published in *Labour/Le Travail*-Spring 2001

[vii] The Citizen, 2008/07/07

[viii] Meredith, Martin. Diamonds, gold and War. Johannesburg: Jonathan Ball Publishers(Pty.) Ltd.

[ix] Guild, Ronald and Stanton, David. Collation of Historical Health and Accident Data in the South African Mining Industry. Simrac: 2003

[x] Chamber of Mines. Figures and Facts. CoM, 2009

[xi] Note that the number excludes the Lily Mine Disaster, where bodies have not yet been recovered.

[xii] Department of Mineral Resources. Minister's Statement, 19 January 2017

[xiii] Gazi, Thabo. Press release, Publication of the Presidential Audit Findings. Pretoria, 2 February 2009

[xiv] Barker v Union Government 1930 TPD

[xv] Ryan, Amanda. WAHSA Occupational Health and Safety Profile-South Africa. WAHSA, 2007

[xvi] Mr. Justice JF Marais. Report, Marais Commission of Inquiry into the Coalbrook mining disaster, 1960, interim report 1963

[xvii] *Evers*, T.M. and van den Berg, R.P. Ancient mining in southern Africa.

[xviii] Meredith, Martin. Diamonds, gold and War. Johannesburg: Jonathan Ball Publishers(Pty.) Ltd.

[xix] Newspaper Article, Standard and Diggers' News, 10 June 1899

[xx] Meredith, Martin. Diamonds, gold and War. Johannesburg: Jonathan Ball Publishers(Pty.) Ltd.

[xxi] Pakenham, Thomas. The Boer War, Weidenfeld and Nicolson, London. 1979

[xxii] Leon, RN (Chairperson). Report of the Commission of Inquiry into Safety and Health in the Mining Industry, 1994.

[xxiii] Holland, ML. Risk, Economy and Safety, Failure Minimisation and Analysis, Penny (ed.), Balkema,

[xxiv] Smith, Matthew. Working in the Grave. Mining Accidents on the Wiwatersrand Gold Mines, c1900-1940. South African Journal of Economic History, Volume 7, No. 2. 1992

[xxv] Marais, JF, Justice. Report, Marais Commission of Inquiry into the Coalbrook mining disaster, 1960, interim report 1963

[xxvi] Transvaal Chamber of Mines. Report, Executive Committee Annual General Meeting, 1906.

[xxvii] Fedderke, Johannes and Pirouz, Farah. The role of mining in the South African Industry, University of the Witwatersrand, published in ERSA

[xxviii] Leon, RN (Chairperson). Report of the Commission of Inquiry into Safety and Health in the Mining Industry, 1994.

[xxix] Buyelwa, S, Minister. Keynote address, 2007 MHSC Summit

[xxx] Loxton. Written submission, Chamber of Mines. Leon Commission, 1994

[xxxi] Swartz, Jaco. The potential legal liabilities posed by conveyor belt installations. Paper presented at Safecon 2014.

[xxxii] GNR 1024, Gazette 38339, 19 December 2014

[xxxiii] Conveyor Manufacturers Association of SA Ltd. Safety Around Belt Conveyors, CMA MS01 Revision 4/2016

[xxxiv] Transvaal Chamber of Mines, 63 Annual Report, 1952

[xxxv] Leon, RN (Chairperson). Report of the Commission of Inquiry into Safety and Health in the Mining Industry, 1994.

[xxxvi] Zwane, Mosebenzi. Press release, 2016 health and safety statistics, Department of Mineral Resources

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