

# Working environment versus workers' compliance with occupational safety and health protective equipment in Malawi's mining sector

**KM Malema**

Chief assessment and investigations officer, Ministry of Labour, Malawi

**Correspondence:** Mr KM Malema, Ministry of Labour, District Labour Office, PO Box 55, Rumphi, Malawi  
e-mail: kmalema.au@gmail.com/kalani.malema@gmail.com

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## INTRODUCTION

Since the enactment of the Occupational Safety, Health and Welfare (OSHW) Act of 1997,<sup>1</sup> Malawi's working environment in mining workplaces has not improved. Workers' non-compliance with occupational safety and health (OSH) protective equipment has also remained a challenge in Malawi for the past two decades.

Mukherjee (2016) observed that the working environment should be compatible with an employee's physical comfort as maintaining normal temperature, combating humidity, ensuring proper ventilation and illumination, and minimising noise pollution all contribute to job satisfaction.<sup>2</sup> Mukherjee concluded that the work environment has a considerable impact on the efficiency, safety and health of the worker and that a supportive environment is, therefore, a prerequisite for minimising the physical and mental stress of the employee.

In the OSHAfrica 2019 Conference report, Dr N Ndlovu, chief rapporteur, highlighted some quotes from the closing address by the South African Minister of Health:

*"Much research was done in the 1950s and 1960s on the effects of working under conditions of extreme heat on mine workers in South Africa. The current increasing global temperatures bring new challenges, not only for mines, but also for many other workplaces. It is projected that temperatures may increase by 2–4 °C during the hottest months over the next decades, changing the occupational heat situation from low to moderate or high in much of the continent."*<sup>3</sup>

This message emphasises the importance of research on the working environment, considering the effects of climate change along with the need to continue strategising on how to guarantee the safety and health of workers.

Countries, worldwide, enact occupational safety and health laws to protect workers from the impacts of their working environments. However, recent studies<sup>4,5</sup> reveal increasingly unfavourable working environments and increased non-compliance with the use of personal protective equipment (PPE) by underground mine workers in some developing countries, including Malawi.

The purpose of this paper is to discuss the unfavourable working environment, based on practical experiences and empirical studies, as the working environment is reported to be a contributing factor to workers' non-compliance with OSH PPE.

## Working environment in the underground mines in Malawi

For the purposes of this article, the working environment is defined to include factors such as space, light, rest time, temperature, location/position, and people.<sup>4</sup>

Most underground mines in Malawi can be described as horizontal or cylindrical tunnels through which mine workers (e.g. coal drillers) work by drilling, while moving forward. Unfortunately, when creating these mining tunnels, no prescribed diametrical measurement standards are followed, which would allow some level of comfort for the worker(s). A review of the Malawi mining policies, regulations and laws, together with the OSHW Act, reveals silence on such diametrical measurement standards.

In the absence of regulations with respect to measurement standards, the mining tunnels have different diametrical measurements, depending on the mining company's capacity to equip miners with the required drilling tools and knowledge, as well as its capacity to support and manage the underground tunnels over time. This means that, in Malawi, large-scale mining companies with relatively high management capacities are likely to have spacious underground mine tunnels, while others will be more cramped.

Furthermore, some mining tunnels are relatively longer than others. For example, the longest mining tunnels of the deepest and largest underground mines at either Kaziwiziwi Coal Mining Company (KCMC) or Mchenga Coal Mining Company (MCMC) – the two largest coal mining companies in Rumphi district of Malawi – are as long as 130–145 metres, horizontally.<sup>4</sup> They are also up to 50 metres deep, vertically, the point from which they spread horizontally in different directions. The working environment in these underground mining tunnels is one area of interest discussed in this paper.

In March 2010, when I was a district labour inspector, I had an opportunity to accompany the Minister of Labour, the District Commissioner (DC), and the ministry's Director of Occupational Safety and Health on a surprise tour of one of the deepest and largest coal mines at MCMC in the district. The entourage was led by the company mine manager and his team members. Upon disembarking from the shaft elevator, after reaching the deepest point (at about 50 metres) and before proceeding horizontally, almost all of us were sweating profusely from the extreme heat being emitted from the walls of the mine.

Without hesitation, the Minister asked the mine manager if we were safe underground. Our safety was confidently assured and we proceeded horizontally while the temperature steadily increased. Soon, the DC communicated that he believed the hot environment to be unsafe for anyone, including the miners. However, the mine manager and his team continued to assure us that we were safe underground and that we were merely not used to such hot environments. Nevertheless, our tour was abruptly terminated by the Minister due to the intense heat. Thus, although we had planned to inspect at least three drilling points, we were able to reach only one.

In addition to the unbearable heat, the floors underground were damp and even muddy in places, with water dripping from the walls. The lighting was also inadequate. Despite these adverse conditions, workers were extracting coal at the drilling points, usually confined to small spaces, either seated or bent over while working.

Most of the underground mines in the district have similar work environments, which might well extend to the rest of the country and perhaps other developing countries in Africa and the world at large. While studying for a PhD at Andhra State University in India, I had another experience when visiting an underground coal mine in Visakhapatnam City. Working conditions were very unhealthy, and the working environment was risky.

Ahmed et al.<sup>6</sup> have also reported extreme and unfriendly conditions for workers in the informal Pakistan construction industry where the use of PPE was unpopular with workers who reported that it caused sweating and irritation in the dry seasons. Although the study was not about working environments in the mining sector, it provided a comparison with another heavy work industry.

In summary, the underground mine working environment is associated with dampness, wet floors, heat, and absent or inadequate light. Workers are usually confined to a specific space (mining tunnel), either seated or bent over while working (extracting coal) for at least six to eight hours continuously in a working day. Work efficiency (ergonomics) is negatively affected in such environments, negatively affecting productivity. This raises the question of whether the unfavourable working environment contributes to non-compliance with the use of OSH protective equipment by mine workers.

### **Workers' compliance with occupational safety and health protective equipment**

Occupational safety and health protective equipment is regarded as PPE. Section 58 of the Malawian OSHW Act of 1997<sup>1</sup> stipulates that:

*"... employers shall provide and maintain suitable protective clothing and appliances, including suitable hand gloves, footwear, breathing masks, goggles, earmuffs and head covering [head crush helmets] at no cost to employees [workers] for their use, as required, at any workplace with workers employed in any process involving excessive exposure to heat, cold, noise, wet or to any injurious or offensive substance, or any welding process."*

Section 18 of the Act provides that:

*"... it is a duty of every worker to take reasonable care for the safety and health of himself/herself and that of other people who may be affected by his/her acts or omissions at a workplace."*

This implies that workers can take care of their safety and health by making full use of provided OSH protective equipment while at work, along with other protective measures. It is true that many occupational accidents and/or injuries can be avoided through the use of such protective equipment. However, studies have shown that mine workers ignore the requirement to use OSH protective equipment while at work.<sup>4,7</sup>

A few years ago, I conducted a study on the working conditions in the mining sector in Malawi. I reported that, while the employers of MCMC and KCMC struggle to comply with labour laws in respect of providing mine workers with adequate protective equipment, some workers fail to wear protective equipment while at work, arguing that it delays or disturbs them, or makes them feel hot or uncomfortable.<sup>4</sup> This behaviour undermines safety regulations and promotes the occurrence of accidents and injuries. I recommended that the management should enforce usage of protective equipment; for example, by sending such workers home and marking them absent for that day.

Simukonda (2019) conducted a study on OSH practices in the construction industry on 350 contractors in Malawi and reported that workers ignored the requirement to use OSH protective equipment while at work.<sup>7</sup> Reasons for this included ignorance about OSH practices, vandalism of safety posters and signposts, theft and incorrect use of PPE, and refusal to undergo medical examinations. Simukonda<sup>7</sup> argued that extreme weather conditions influenced negative attitudes towards OSH protection, supporting the findings of Ahmed et al.<sup>6</sup> Simukonda<sup>7</sup> concluded that the negative behaviour of construction workers in Malawi may be associated with the subtropical climate, which is relatively dry from September to April. He suggested that inexperienced workers need some time to familiarise themselves with the use of PPE, particularly from an ergonomics point of view, similarly to novice workers who are more likely to get injured by failing to use working tools correctly or take preventive measures.

The findings from my study (Malema, 2017) suggest that while workers ignore the use of PPEs, they are fully aware of the importance of PPE for their health and safety while at work and know that it is a legal requirement for them to use PPE. On the other hand, Simukonda's findings indicate that non-compliance is due to workers' ignorance about OSH practices and incorrect use of PPE. This implies that there is a knowledge gap regarding the need and use of PPE. Nevertheless, all the findings suggest that harsh or unfavourable working environments contribute to workers' non-compliance regarding the use of PPE.

The respondents in this study in the mining industry were workers,<sup>4</sup> while those in Simukonda's study in the construction industry were employers.<sup>7</sup> It is likely that workers' views differ from those of employers with regard to PPE non-compliance.

Questions for further research remain, such as whether an unfavourable working environment is the only factor that contributes to workers' non-compliance with regard to the use of PPE; and whether legal requirements to use PPE can be balanced with workers' rights with regard to their choice of clothing in the context of enforcing the use of OSH protective equipment for safety and health reasons. The answers to these questions are important for OSH enforcement officers/practitioners and policy makers in their attempts to find effective solutions and strategies to address the problem of workers' non-compliance with regard to the use of PPE. In addition, answers to these questions may help policy makers to formulate a single African OSH legislative policy or Act as recommended in the OSHAfrica 2019 Conference report.<sup>3</sup>

## CONCLUSION

This paper addresses the working environment in the underground mines in Malawi and concludes that the working environment is unfavourable. Workers' non-compliance with regard to the use of PPE is perceived to be associated with harsh working environments, among other factors. Further research is recommended to fully understand factors affecting workers' non-compliant behaviour with respect to use of PPE in underground mines.

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