Beyond the rock face: A woman's journey in occupational hygiene

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Beyond the rock face lies a story not of minerals, but of people and a woman who chose to measure the invisible risks that shape their lives. Stepping into a mine as an occupational hygienist is humbling. Armed with instruments that detect what our senses often miss – dust, gases, noise, heat, and other occupational stressors – you enter with the awareness that each number recorded is far more than data. Every result represents a person, a workplace and, potentially, a lifetime of health consequences.

I never planned to work in mining; my dream was to become a family physician. That changed when I met Prof. Fritz Elof of North-West University during a visiting lecture. He held out a container of silica dust and explained how prolonged exposure could lead to cancer for miners. He also highlighted the critical shortage of occupational hygienists in the mining sector. That moment became my turning point, my "aha" moment. I realised that mining was not just about rocks, but about the people who work with them.

My journey in mining has also been one of discovering my own voice, as a scientist, a woman and, ultimately, a leader. I did not set out to be known as a 'woman in mining'. I entered the field out of fascination with science and its real-world application. Yet, I quickly learned that being a woman in a traditionally male-dominated environment comes with unique challenges. Technical competence alone does not guarantee a voice. You must stand behind your data, defend your scientific judgments and, just as importantly, know when to listen. Over time, I discovered that success did not require me to mimic my male counterparts, but to ask a different question: "What can I contribute to mining?" This shift in perspective transformed my career.

Occupational hygiene exists at the intersection of science, engineering, medicine, and human behaviour. South Africa's Mine Health and Safety Act recognises its importance and requires systematic assessments of hazards such as airborne pollutants, noise, and thermal stress. But compliance is only the beginning. Measurements should spark dialogue, not end it. Asking "What causes exposure?" and "Do our controls work?" reshaped my understanding of occupational hygiene and its role in sustainable mining, a discipline that integrates environmental, safety, risk management, and governance.

The future of occupational hygiene cannot be defined solely by the instruments we carry. Exposure science is evolving, driven by real-time monitoring, advanced technology, and multidisciplinary approaches. My own research on diesel engine exhaust and particulate matter underscored this shift. We are moving beyond periodic sampling toward data analytics, exposure modelling, and deeper insights into particle behaviour.

As my career progressed, I came to see that technical expertise and leadership are intertwined. At some point, an occupational hygienist must move beyond reporting exposure levels to influencing organisational decisions, a step that requires courage. My journey led me from an occupational hygienist to an executive role, where I now influence decisions on occupational health, safety, and environmental, social, and governance matters both at company level and within the Mine Health and Safety Council Board.

Our discipline must be represented not only at the operational level, but also in strategic decisions, including mine design, equipment selection, technology adoption, maintenance, production, and capital investment. Prevention should start at the design stage, not after exposure has already occurred.

I would be remiss not to acknowledge the significant progress made through the Woman in Mining initiatives, with many women now occupying technical, leadership, and decision-making roles – from the boardroom to the workplace, and through innovations such as fit-for-purpose personal protective equipment designed for woman. The industry is increasingly recognising that inclusion must be reflected not only in representation, but in how we design safer, more equitable workplaces for everyone.

To young women considering a career in occupational hygiene, I urge you to embrace curiosity and courage. And to young men entering the profession, I extend the same message: become allies. Make space for diverse voices, mentor those who may not resemble you, challenge preconceived notions, and recognise talent wherever it emerges.

Beyond the rock face, the true legacy is not the ore we extract, but the voices we empower and the lives we protect. Seek your purpose, find your voice, trust your expertise, and apply your knowledge to make mining safer and healthier for those who follow in your footsteps. That is the legacy worth leaving behind!

FROM THE EDITORS: HONOURING WOMEN'S MONTH EVERY AUGUST

We thank Dr Modau for sharing her experiences in the workplace as we celebrate Women's Month, concentrating on women employed in an industry that is traditionally male-dominated. In this issue, The Minerals Council South Africa honours Dr Thuthula Balfour, who has retired after an exceptional career during which she spearheaded many occupational health initiatives. Redpath Africa Limited pays tribute to three women who work in diverse positions in the mining industry.

It is not only women in the mining industry who are represented in this issue. Khahlane and Makhakhe present a case of latex allergy in a female dairy farm worker, which resulted in dismissal. The dust exposure experiments described by Brouwer and Renton have

implications for both men and women in the construction industry, in which close to 150 000 women are currently employed in South Africa.[1] Asfaw and colleagues present their work on frontline health workers during the COVID-19 pandemic in Lesotho where, like South Africa and other countries, most are women.

While women in South Africa have always worked, it was only around 100 years ago that they entered the formal job market.[2] Currently, about 5.5 million women are employed in the formal sector.[1] Entry into this 'world of men' came at a price and women now feature strongly in occupational disease and injury statistics.

August is the month that we celebrate the bravery of all women, all of whom work in one way or another and, by doing that work, make the country and better place for us all.

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