WOMEN IN THE SOUTH AFRICAN MINING INDUSTRY: AN OCCUPATIONAL HEALTH AND SAFETY PERSPECTIVE

Inaugural Lecture:

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SHOW SLIDE 1

It seems fitting to begin my inaugural lecture with wise words from Clare Boothe Luce – words, that hold an important place in my personal drive to succeed.

Because I am a woman, I must make unusual efforts to succeed. If I fail, no one will say, "She doesn't have what it takes." They will say, "Women don't have what it takes." Clare Boothe Luce

I stand here before you this evening as testament of the fact that as women "we have all that it takes" – and there is no better place where this is demonstrated than within the South African mining industry (SAMI). Hence, the premise of my lecture is on occupational health and safety of women in mining.

Given the fact that work should take place in a *"safe and healthy"* working environment, women in mining have special occupational health and safety needs that must be

met on an individual basis with due concern to protect their well-being at work.

OUTLINE OF THE ARGUMENT

Since our attainment of democracy in 1994, the South African government has made and implemented a number of policies and **legislative changes** aimed at fast tracking **economic growth** in pursuit of a better life for all citizens.

And as such, the government recently adopted a number of strategies aimed at opening up the **mining sector** for previously disadvantaged individuals, including **women** as part of its **economic empowerment policy** and in line with the Employment Equity Act.

Of equal importance is the fact that the International Labour Organization has classified women workers as vulnerable workers with **special occupational health needs**. (hence the focus of my address this evening)

SHOW SLIDE 2

In 1995 during the 12th joint assembly, the International Labour Organization and the World Health Organization Committees defined the aims of occupational health, which include:

- **The promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations;**
- The prevention among workers of departures from health caused by their working conditions;
- The protection of workers in their employment from risks resulting from factors adverse to health; and
- **The placing and maintenance of the workers in an occupational environment adapted to his/her physiological and psychological capabilities.**

SHOW SLIDE 3

This presentation aims to argue the case of women as employees in the mining industry from an adapted feministic perspective. **Feminism** will be viewed as the notion that women are unique individuals with inherent specific health needs.

Thus, four inherent assumptions hold the key to the way women's role within mining must be seen:

- although women have special needs, they qualify for the same rights as men;
- a woman can perform tasks that were and still are supposedly limited to men;
- you don't have to be anti-man to be pro-woman; and that

- women do not wish to have power over men, but over themselves.

Given that Mining is one of South Africa's most important economic sectors as it remains an important driver of the country's economy, the **inclusion of women** in this crucial sector has many **implications** for the industry, key stakeholders and the society at large.

On the other hand, it can be argued that the introduction of women in mining challenges the very male, **"macho"** gender stereotype and introduces new challenges for mineworkers, the mining industries as well as the mining bargaining council.

SHOW SLIDE 4

WITH REGARDS TO LEGAL FRAMEWORKS RELATED TO GENDER EMPLOYMENT

It is important to note that The history of women in mining has noteworthy legal genesis which has arisen from a number of landmark legal developments.

Significantly, the **Minerals and Petroleum Resources Development Act** actively encourages entry of historically disadvantaged individuals to participate in the mining sector.

The **greatest challenge** for the mining industry has been to introduce and ensure full incorporation of women into the

traditionally male-dominated sector. The Second Annual Women in Mining Conference[1] held in 2008, acknowledged that there were significant hurdles to overcome in terms of commitments made during the Mining Charter process.

However, a significant advance in the mining industry is the **South African Mining Charter**, adopted in 2004 which must be commended.

The Charter requires mining industries to actively change the demographic profile of their employees and to ensure that they have plans in place to achieve the target of 10% participation of women by 2009.

The Charter therefore attempts to address the high proportion of male mineworkers and provide opportunities for female miners.

Similarly, the **Employment Equity Act** prohibits employment discrimination on the basis of race, religion or **gender** in the workplace.

This is in addition to the **Mine Health and Safety Act**, as amended in 1997 which requires employers to provide healthy and safe working conditions for **all** employees involved in mining activities in order to safeguard their **health and safety** and communities affected by mining operations.

[1] Second Annual Women in Mining Conference; Recruit, Retain and Accommodate Women in Mining Pre and Post 2009. Indaba Hotel Fourways 26 – 28 March 2008

Section 7 of **Chapter 2** of the **Constitution of the Republic of South Africa Act** adopted in 1996, which forms part of the **Bill of Rights**, also affirms the democratic values of human dignity, **equality** and freedom.

The **Millennium Development Goals** number 1 and 3 are assigned the collective responsibility to promote **gender equality** and **empowerment for women** and to halve the world's poverty by 2015.

Also, the **Human Resource Development Strategy for South Africa (HRD-SA) 2010 - 2030** is a *"call to create a better life for all South Africans*," in order to address some of the most critical challenges that the country still faces, which include among others, **unemployment, poverty** and **income inequality**.

NB: Whilst these various legislations allow the **influx of women in the mining industry,** substantial amendments needs to be introduced especially since the mining industry was previously a male dominated environment. One important area that needs urgent attention is **the promotion and maintenance of health and safety for women working underground**.

GENERAL HEALTH AND SAFETY HAZARDS IN THE SOUTH AFRICAN MINING INDUSTRY

SHOW SLIDE 5

According to DMR, 2009 annual report, **silicosis** remains a major cause of premature retirement and death at South African mines due to excessive dust exposure. On the other hand, Tuberculosis continues to be a serious health challenge for the mining industry and this is exacerbated by the presence of HIV and AIDS.

Tuberculosis and HIV/AIDS are significant health risks in the South African mining industry- **much more so than in the general public**.

This is due to the fact that these diseases are bound up with living and working conditions of miners, such as migrant labour, single sex hostels, undiagnosed active TB and closed ventilation systems in underground mines.

Furthermore, **exposure to silica in mining operations together with HIV infection**, exacerbates the risk of active TB (Hermanus, 2007).

Noise Induced Hearing Loss is also a significant health hazard due to exposure to high levels of noise in working places (DMR Annual Report, 2009).

SLIDE 6 HEALTH AND SAFETY MILESTONES

At the health and safety summit held in 2003, the tripartite stakeholders in mining reached consensus with regards to targets and milestones for the mining industry, in order to address the major health and safety hazards of the sector (Hermanus, 2007). The milestones are considered to be the intermediate steps to achieve the following targets for the mining sector by 2013:

- Zero injuries and fatalities
- Elimination of silicosis
- Elimination of noise-induced hearing loss

THE NEED FOR A HEALTHY AND SAFE ENVIRONMENT FOR FEMALE EMPLOYEES

Mining involves hard physical labour under conditions of extreme discomfort, deafening noise, intense heat and humidity and cramped space. This is exacerbated by anxiety and tension stemming from the need to be constantly on the alert for signs of potential hazards and danger.

In South Africa, there is a paucity of published data on the health and safety concerns and issues of women in mining. This is partly because mining operations have been biased towards the employment of men as opposed to women.

This therefore calls for more attention to be paid to health and safety issues of women in mining which include among others,

- the **availability of welfare facilities underground**,
- **physiological changes** and **psychological vulnerability inherent** among women that may affect their health and safety at work,
- **impact of shift work on women's family lives, personal protective equipment** is generally designed for the male physique (based on the history of male dominance in the industry) and
- **resistance by their male counterparts** to fully accept and regard them as equal work partners.

SLIDE 7 THE MALE ORIENTATED MINING OCCUPATIONAL CULTURE

It is acknowledged that women in mining face **greater risks** to their health and safety than men, simply because they use machinery, tools and equipment that have been designed for use by men.

Furthermore, given that the physical demands of mining are matched to the physical abilities of men, women face **increased risks** to injury and ill-health in the workpalce (Hermanus, 2007).

Thus, the effects of the male orientated mining culture can be reflected in women as **acute and chronic stress** reactions, which results from two primary occupational sources, i.e.

(1) feelings of discrimination in a male-dominated work environment and;

(2) conflicts associated with balancing work and the family.

These stress reactions are supported by literature suggesting that working women are more likely to experience stress from conflicting work and family life.

SLIDE 8 GENDER AND LABOUR STATISTICS IN THE SAMI

Given the high unemployment rate in South Africa which stands at 25%, employing women in the South African mining industry assists in addressing such a high unemployment which facilitates women **empowerment** and will ultimately translate into **poverty alleviation** in the country.

But one must bear in mind that this tends to challenge a range of traditions and norms, in order to accommodate WIM and promote their wellbeing at work.

SHOW SLIDE FIGURE 9

The distribution of all mine workers between year 1988 (before the adoption of the Mining Charter) and year 2009 (after the implementation of the Mining Charter), is shown in Figures 1 and 2 (DMR Bulletin, 2010).

However it should be noted that these figures represent mineworkers at all levels (i.e. both underground and surface).

With regards to employment patterns in the sector, it is noticeably that from the (first 12 years), i.e. year 1988 to year 2001, the total number of mineworkers was decreasing. It was found that from the year 2002, the total number of mineworkers increased except for the year 2005, when there was a slight decrease.

SLIDE 10

Regarding gender distribution of the mineworkers, almost all of them were males (**98%** in 1988, **93%** in year 2009).

Compared with previous years, significantly more females were employed since the year 2004 till 2009. **PROBABLY BECAUSE OF THE ADOPTION OF THE MINING CHARTER.**

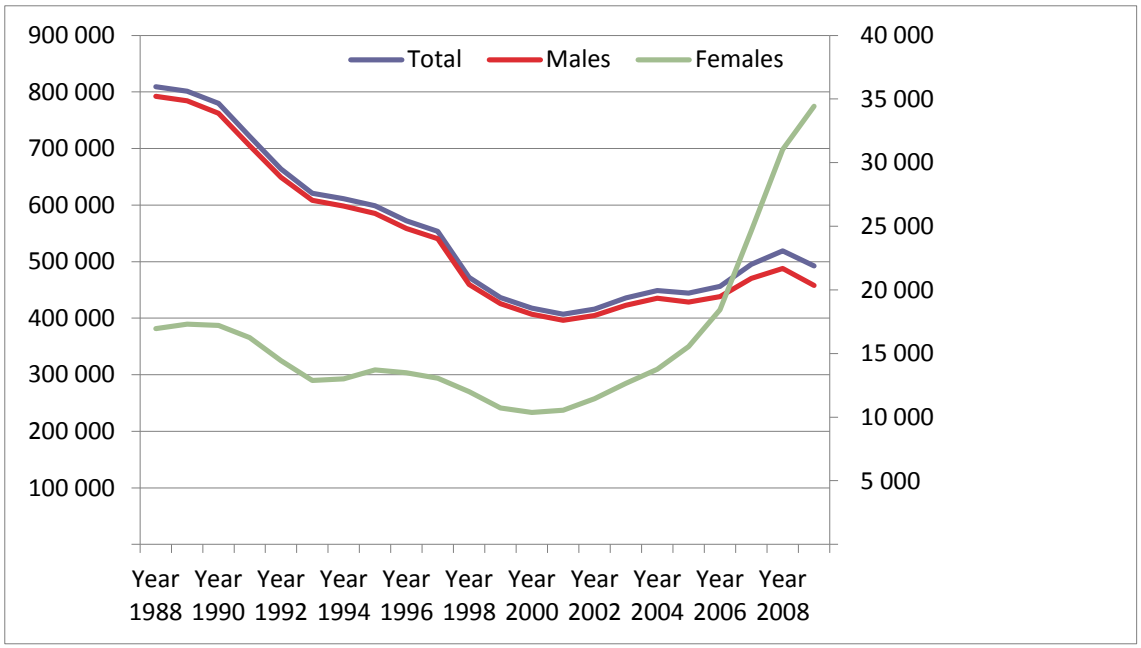

Figure 1: Distribution of all mine workers from 1988- 2008 (MDR Bulletin, 2010)

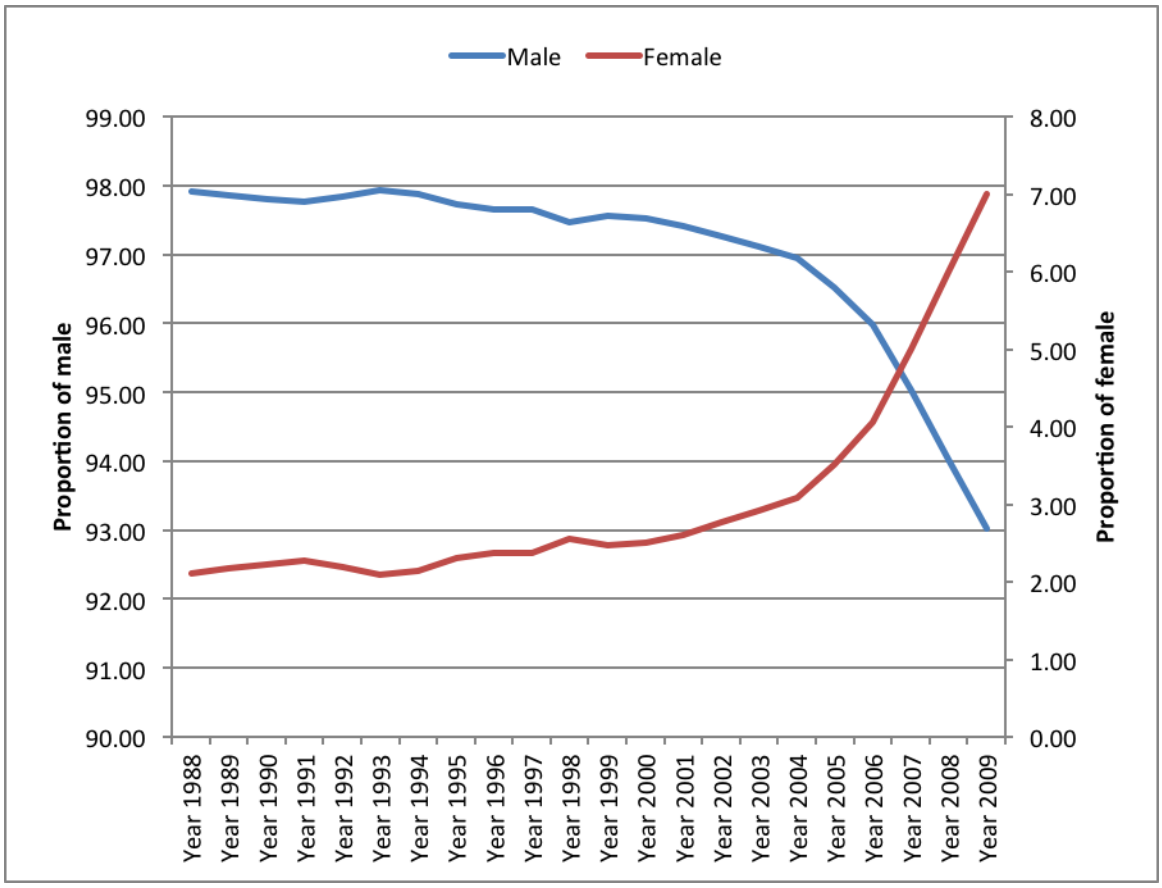

Figure 2: Gender distribution of mineworkers from 1988 - 2009 (DMR Bulletin, 2010)

The employment statistics illustrated above, call for a notion of ensuring that the mining environment is ***"woman friendly"*** in order to attract more women in mining and promote gender equality and empowerment for women, which will aid in poverty alleviation, in line with the Millennium Development Goals framework. **THAT IS WHY IT IS CRUCIAL TO PROMOTE HEALTH AND SAFETY OF WIM BY CATERING FOR THEIR SPECIAL HEALTH NEEDS – SO AS TO RETAIN THEM IN THE INDUSTRY.**

SLIDE 11

MASCULINITY AND FEMINITY IN MINING

There is an increased emphasis on safety in the mining industry, just like in any other workplace and a strong belief that **administrative** and **engineering** control measures, coupled with the safest ways to operate machinery, are the best options to execute various tasks. However, the relationship between practices of **masculinity/feminity** and safety related behaviours must not be ignored in the quest to promote a safety culture, especially in mining.

Evidence exists that there are competing forms of masculinity and the one that is related to mining activities is ***"hyper-***

masculinity," more so' because physical strength and size of the individual miner are dominant (Laplong, 2010).

Literature findings from a study conducted among male mineworkers showed that **men who work in the mining industry are geared for risk-taking, hyper-masculinity behaviours and practices which involve acting tough and taking risks that might compromise their own health and safety as well as of that of their colleagues (including WIM).** This notion of '*toughening up and risk taking behaviour*" challenges their female counterparts who are more likely to function in a safe space.

More so because, it is generally acknowledged that women, on average, are more concerned with environmental, health and safety issues of mining (i.e. they are health and safety conscious) than their male counterparts. This shows a need to further promote a safety culture in the mines by encouraging an awareness and understanding among mine workers of how their **gender identity** affects behaviour which can sometimes commend *unsafe* practices.

SHOW SLIDE 12

A. OCCUPATIONAL HEALTH CHALLENGES IN THE MINING INDUSTRY

- **PHYSICAL HAZARDS**

In line with the MHSA and the ILO's standard to promote decent work for all, the mining industry has a moral obligation to promote and maintain health and safety in the workplace with a focus on the prevention of occupational injuries and illnesses among the entire workforce.

A cross-sectional survey conducted in 2009 by the DMR among women in mining showed that the most common occupational health hazards were exposure to **noise** (n=198) and **dust** (n=152) levels. Exposure to **heat** (n=95) and **chemicals** (n=56) were the next common categories of health hazards identified by participants. The least common category of health hazards was exposure to **radiation** (n=48), as shown in Figure 3:

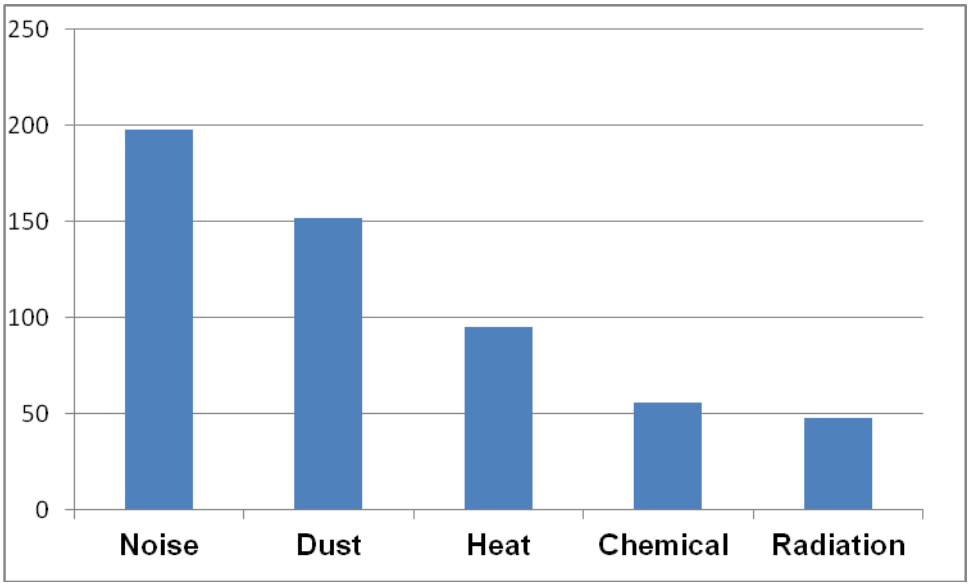

Figure 3: Exposure to physical hazards among WIM (N=501)

- **HEAT STRESS** **SLIDE 13**

Occupational heat stress is a recognized health and safety hazard in South African mines. The consequences of high occupational heat loads can be expressed in terms of :

- impaired work capacity,
- errors of judgment with obvious implications for safety,
- lethargy and fatigue
- as well as other complications like heat stress which can lead to heat stroke, which is often fatal (Schutte, 2009).

In South African mines a **'hot environment'** means any work environment where the dry-bulb temperature is higher than 37,0 ºC, or where the wet-bulb temperature is higher than 27.4 °C, and a **'hot environment'** necessitate the introduction of

practices to safeguard mineworkers' health and safety (Schutte, 2009).

MEN WITHOUT UPPER CLOTHING SLIDE 14

There are personal risk factors that may reduce an individual's tolerance for heat stress and they include among others:

- age
- obesity
- state of hydration
- use of medications and drugs
- gender
- and acclimatization state

With regards to women in mining, careful considerations of gynaecological conditions and pregnancy in relation to environmental heat stress is crucial, in addition to the fact that pregnancy involves altered hormonal levels, changes in fluid balance, and increased circulatory demands.

- **ERGONOMIC HAZARDS <u>SHOW SLIDE15</u>**

Literature has revealed that working tools and equipment are often designed to be used by average-sized men, For an example:

Handle size and tool weight are designed to accommodate the size and strength of men, yet the average hand length of women is shorter than the average man's.

- Furthermore, the grip of tools are typically too thick and women workers do not receive special training on how best to use tools and equipment designed for men.

<u>SHOW SLIDE 16 (WOMEN BENDING WORKING IN A STOPE)</u>

There is a critical need to increase awareness and knowledge of the ***"safe limits"*** for women for lifting and other motions, such as forward flexion of the trunk (bending over). This information would be useful for preventing low back disorders and other MSDS among women working in heavy duty industries like mining and construction.

SHOW SLIDE 17 (WOMEN CARRYING)

Women's size and body build require reconsideration of techniques **for lifting and heavy material handling**.

Since, on average, women tend to have **less upper body strength than men,** they therefore cannot use all the techniques that their male counterparts use for lifting of heavy objects and material handling.

SHOW SLIDE 18

Table 1 below shows the proportions of women in mining who reported incidences of various types of musculoskeletal disorders (DMR, 2009).

Table 1: Incidence of Musculoskeletal Disorders (N=501)

Type of MSDS	n	(%)
No MSDS reported	245	48.9
Amongst those who reported MSDS		
All forms of MSDS	29	11.3
Backache	**106**	**41.4**
Hand Pains	23	8.9
Joints Pains	26	10.1
Shoulder Pains	**72**	**28.1**

- **REPRODUCTIVE HAZARDS SLIDE 19**

For WIM reproductive hazards are related to exposure to chemical, physical, or biological agents that can cause either reproductive impairment or adverse developmental effects on foetuses.

In general the reproductive status of females is **socially** more important in certain **cultures**, since the female is usually blamed for a couple's reproductive problems, which makes women of child bearing ages in mining more **socially vulnerable** than males.

Therefore, Reproductive toxicants are evidently more important for women in mining than their male counterparts.

Essentially, the legislated practice in the SA mines is that pregnant female mineworkers are not permitted to work underground and consequently they should be accommodated on the surface (subject to availability of such tasks), failing which they are given an option to go on unpaid leave, until their maternity benefits commence. This is done precisely to **safeguard** their own health as well as that of the unborn child.

However, the another **safety challenge** is brought about when a female mine worker who is not aware of her pregnancy continues to work underground and be exposed to hazardous

chemical substances that can have an adverse effect to the foetus.

(in that regard awareness/health education regarding early signs of pregnancy is crucial)

As revealed by the findings of a cross-sectional survey conducted in 2009, by the DMR, the majority of women in mining are women of childbearing age and less than 40 years old.

Since these women are at their reproductive age, there are hazards that may have a negative effect on their ability to conceive, giving birth to unhealthy babies or in worst case scenario they may experience miscarriages.

SHOW SLIDE 20

Table 2 shows the proportions of pregnancy outcomes among women who fell pregnant while working in the mining industry (DMR, 2009).

Table 2: Pregnancy outcomes among women in mining (N=220)

Pregnancy outcome	N	(%)
Delivered a healthy baby	199	90.4
Had miscarriage	8	3.6
Experienced complications during pregnancy	3	1.3
Not yet delivered	10	4.5

Based on the survey findings, it is commendable that the majority of WIM gave birth to healthy babies, **however the effects of exposure to reproductive hazards among women in mining, using a larger sample needs to be further explored, in order to prevent pregnancy-related complications.**

Also, there is scarcity of data on the extent to which female mineworkers are exposed to reproductive hazards in mining, and this aspect needs to be empirically explored.

- **SANITARY FACILITIES** **SHOW SLIDE 21 (toilets)**

Access to sanitary facilities is frequently a problem for women working underground.

Temporary facilities are usually **unisex, often without privacy, and generally not very well maintained**.

Sometimes there are no sanitary facilities available for women to use in the sections where they are allocated underground, and they are compelled to either walk long distances (about 10-15 minutes) before reaching a (closer by) facility, or they suppress the urge to urinate until they get on the surface.

Scientific evidence has shown that holding urine in the bladder for an hour or even longer after experiencing an urge to urinate

leads to a higher incidence of urinary tract infections (Foxman & Frerichs, 1994).

Additionally, underground sanitary facilities are not equipped **with running water** (for hand washing after toilet use) and provisions for disposal of sanitary towel are not provided in most instances.

As a result of a lack of adequate sanitary facilities underground, women opt to avoid drinking water on the job, thus risking heat stress and other heat related problems – **which can compromise their health and safety whiles working underground.**

SLIDE SHOW 22

B. OCCUPATIONAL SAFETY CHALLENGES IN THE MINING INDUSTRY

- **PERSONAL PROTECTIVE EQUIPMENT man with PPE**
  SLIDE SHOW 23

Generally, PPE is the last level hazard control measure to protect workers from exposure to workplace hazards and as such it should be carefully selected based on the **nature of the hazards in the workplace**, the **level of risks** associated with those hazards, **gender differences**, obviously require that

protective clothing be specifically designed for women in mining.

Therefore, certain attributes should be taken into consideration when designing safety equipment for women in mining, particularly the clothing like overalls. Evidently, **anthropometric studies have shown that women typically have shorter arms, more flexible hips and more slender hands and feet, and their faces are shaped differently from those of men.**

Remarkably, the limited availability of PPE for WIM **(due to the history of male dominance in the industry)** has been found to be a **critical workplace health and safety concern** and a hurdle to equality of employment opportunities for women in the mining industry.

SLIDE SHOW 24 (ILL FITING PPE)

Not only does poorly fitting personal protective equipment causes discomfort to WIM (who are PPE end-users), but it also restrict their ability to move easily and to work safely and also exposes them to environmental hazards associated with mining which might compromise their health and safety.

Local studies have shown that generally if PPE is ill fitting and uncomfortable to wear, workers (end users) **tend to avoid using** it regardless of the risk involved.

The current practice in the SA mines is that, women requiring PPE find themselves forced to use/wear equipment/clothing designed for men. **This practice then defeats the effort to promote gender equality in the mining industry**.

SHOW SLIDE 25: WOMEN TAKING OFF PPE

A number of studies continue to show that most mines in South Africa have had negative feedback about the suitability of the PPE provided for women For example:

- Toilet breaks for women tend to be longer than necessary due to the need to unclip the headlamp, unfasten the belt and take off the battery and self-rescuer, take off any clothing worn over the overall, and then finally the overall itself; and when all is done to put it back on in the reverse sequence already described, is time consuming.

On the other hand the style of a two-piece suit provided is sometimes unsuited to the larger female physique, because of its low waist pants and a short jacket causing the middle area to be exposed when performing tasks that require bending.

Anthropometry has shown that on average, a woman's foot is shorter and narrower than a man's; the average woman's body is shorter in length, making men's overalls too long in the torso. Her shoulders are narrower, which makes the sleeves too long, and women are usually wider at the hip.

As far as the safety goggles are concerned, women in mining who wear safety goggles often have a greater problem with fit and comfort, because of the ***"one size fits all"*** issue, which becomes too big for women's faces. Consequently, it can lead to a serious health and safety hazard if gaps around the seal to the face allow dust particles, and other hazardous substances to enter the eye area.

This is more so because the dust and dirt in many mining environments, most notably hard-rock mining, **can be highly abrasive.**

Optional to say

Mine workers also use a **harness as an accessory to prevent falling from heights.** It is said that the traditional design of the harness fails many women, because its horizontal strap holding two vertical straps together does not always keep the straps together at the top because it lies above the woman's breasts.

OCCUPATIONAL SAFETY IN RELATION TO TASK PERFORMED

SHOW SLIDE 26

In SA mines, most WIM are involved in **less physically demanding** types of jobs.

DMR survey findings regarding occupational safety in relation to **various tasks** performed by WIM, **56.6%** of women reported that they did not feel safe whilst using **heavy and vibrating tools** underground, compared to **68.1%** and **56.1%** who reported to feel safe when operating the loco and the conveyer belt respectively (see Table 3: DMR, 2009).

Table 3: Safety when performing mining tasks (N=501)

Nature of task	Yes	No
Driving a locomotive	68.1	31.9
Operating a conveyer belt	56.1	43.9
Using heavy and vibrating tools?	43.4	**56.6**
Working in confined spaces?	51.6	**48.4**

CONCLUDING REMARKS

It is evident that (actual and potential) health and safety challenges for WIM calls for due diligence in order to revive a healthy and safe working environment.

Also, there is a need for mindset change and robust interventions **to achieve the zero harm tolerance as per the targets and milestones set in 2003.** This requires a strong sense of commitment and collaboration by key industry stakeholders.

Of particular attention should be given to women in mining and their special health and safety needs in order to enhance optimal and safe productivity.

This will have a great potential to promote a ***"women friendly"*** workplace, advance employment opportunities for WIM and aid in poverty alleviation, in line with the Millennium Development Goals no 3 and no 1 respectively, which will ultimately halve the world's poverty by 2015.

Finally, to further attract women in mining, the industry should implement interventions that aim to facilitate the modifications of mining working conditions in order to promote the health and wellbeing of WIM.

This will also give opportunities to women who may want to venture into the mining industry and **make a substantial contribution to the industry.**

And it goes without saying that… ***"Wathinta aBafazi Wathinta Imbokodo"***

Ngiyabonga.