MINING AND PUBLIC HEALTH IN ZAMBIA

MEETING REPORT

Ministry of Health, Zambia

in collaboration with the

Regional Network for Equity in Health in East and Southern Africa (EQUINET)

SBH Centre, Lusaka, Zambia
April 10 2018

Contents

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1. Background and objectives

Zambia's long-term socio-economic development agenda is guided by the National Vision 2030 which aims at transforming the country into a middle income prosperous nation by 2030. The country has prioritised health, and the equitable provision of a continuum of care with particular emphasis on; promotional, preventive, curative and rehabilitation services. The Ministry of Health is actively engaging with other sectors to promote 'health in all policies', which aims to integrate health within the policies, programmes and activities of the various sectors affecting health and to promote multi-sectoral co-operation to promote health. Mining is a key economic activity in the country. Zambia has a long history of mining and a large known resource base of copper, emeralds, and other deposits. In 2016, mining accounted for 12% of Zambia´s GDP and 70% of total export value. The sector is a significant source of government revenue and employment. Its activities present both potential risks to and opportunities for improved health.

The Southern African Development Community (SADC) framework for harmonising mining policies, standards and laws, approved by the SADC Mining Ministers in 2006, specifies that member states develop, adopt and enforce appropriate and uniform health, safety and environmental guidelines for the sector and seeks to harmonized standardization in health as an immediate milestone area. There has since been progress in regional co-operation on the management of HIV, tuberculosis (TB) and occupational diseases on mines. However there is still a need to address the wider areas of public health in mining, an issue noted in the 2017 East Central and Southern Africa Health Community (ECSA HC) 10th Best Practices Forum and Directors Joint Consultative Conference. EQUINET, as a consortium network of organisations based in the region has for several decades built research capacities and evidence at country and regional level on issues relevant to health equity in the region. EQUINET has implemented research on mining and health to review how far key guidance principles/standards on health in mining are contained in domestic laws in countries in east and southern Africa as a basis for identified good practice that can inform the content for regional guidance for policy and law on mining and public health.

Within this national and regional context, the Ministry of Health in Zambia is in the process of improving public health in the mining sector in the country as part of its Universal Health Coverage policy, as well as to address the social determinants of health. A meeting was thus held to dialogue with key national level representatives of health and related sectors on evidence and actions related to public health in mining.

Objectives: The meeting aimed to

1. Share and dialogue with key national level representatives of health and related sectors on: evidence from Zambia on mining and health with a focus on population/public health issues and the current responses to health promotion, prevention and management, and on evidence from regional level on public health issues and health standards in mining, and their implications for regional responses.
2. To discuss follow up actions in relation to key areas of health and cross sectoral collaboration on mining and public health in Zambia and for regional co-operation and exchange on setting and implementing harmonised standards on mining and health.

The meeting organisation was co-ordinated by Dr A Kabalo, Director, Health promotion, Environment and Social determinants for Ministry of Health (MoH) Zambia with technical input from Dr R Loewenson, Director TARSC for EQUINET. The programme is shown in *Appendix 1* and the delegates attending the meeting are shown in *Appendix 2.* Delegates were provided with background documents from EQUINET. This report is jointly produced by the Ministry of Health and EQUINET and summarises the presentations, discussions and proposed areas of follow up action.

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2. Opening session

Dr Wezi Kaonga, Assistant Director, Environmental Health and social determinants, Ministry of Health opened the meeting on behalf of the Permanent Secretary Dr J abbinMulwanda.

The Assistant Director welcomed all present for this important dialogue meeting. He noted that the meeting aims to bring stakeholders together to dialogue on issues of health in the mining sector and introduced the objectives of the meeting (shown earlier).

Delegates introduced themselves, their work and their expectations of the meeting, including to discuss and share information on:

- public health issues in the mines, including TB, and their determinants
- laws enabling and inhibiting management of health in mining
- the regional perspective on health in mining,
- interventions to promote health in mining, and
- knowledge gaps for further research.

Dr Kaonga informed the meeting that the newly established department of Health Promotion Environment and Social Determinants has a wide lens on health that is engaging many sectors on their role in health, including the mining sector. The department is promoting an approach of Health in All Policies (HiAP) to assess and understand how policies, laws and programmes in other sectors affect the social determinants of health, such as how they affect access to safe water, environments for health, food security and other determinants. He said that this calls for health considerations to be integrated within the full life cycle of an activity such as mining. For example while trauma and injury may be acute, visible and immediate, we also need to prevent and monitor the chronic diseases from exposures related to mining that may be less immediately visible and only emerge over time.

He noted that this needs good evidence and research where evidence gaps exist. At the same time the learning from work in mining can also be shared in the approaches taken in other sectors. He cited the example of agriculture, where dams are being built to support expanded production, that may also increase mosquito breeding and malaria. This means measures for malaria control must go alongside with dam construction. This calls for inter sectoral collaboration, and for both national and regional perspectives, and he welcomed is the meeting as enabling the dialogue with key stakeholders to build the collaboration to foster this.

Dr R Loewenson, EQUINET gave brief opening remarks. She too welcomed the holding of this meeting in Zambia and the collaboration between the Ministry of Health and EQUINET in holding it. She noted that it was held within wider regional processes on mining and health, including dialogue held with health professionals and senior government officials at the ECSA health community, with SADC over its harmonized standards in mining and with different constituencies related to mining in the region within other countries in the region. She noted that she would comment further on the regional perspective in her presentation. She appreciated the government of Zambia for the invitation extended, for its focus on integrating health across all sectors and policies and for the initiative taken to have this dialogue meeting and wished all productive deliberations.

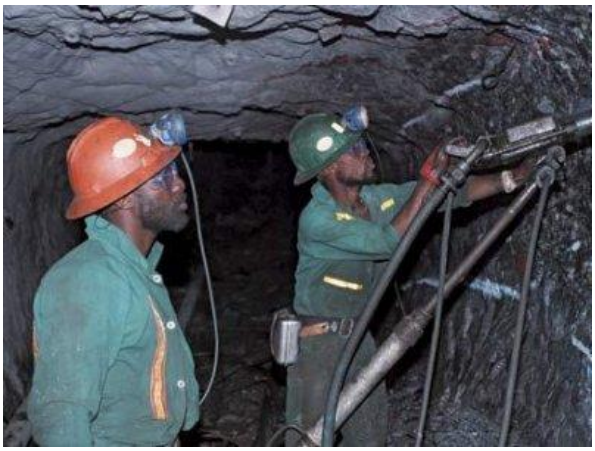
3. Presentations from Zambia

Dr. Andrew Silumesi, Director Public Health, Ministry of Health Zambia chaired the session with three presentations from Zambia and one on the regional work.

3.1 Mining and public health in Zambia

Dr C Mwansa, Director of the Zambia Occupational Health and Safety Institute presented evidence on mining and public Health in Zambia. Mining serves as an integral part of development. Dr Mwansa noted that Zambian towns like Kitwe Chingola, Mufulira and Chililabombwe have been built from resources earned from mining. Large scale mining started in Kabwe in 1902 and on the copper belt in 1910. At the same time there is anecdotal evidence that these activities have affected the health of adults and children and adults. Zambia now mines copper, zinc, lead, manganese, emeralds, gold, uranium, nickel, coal and iron ore. Minig takes place in a spectrum if large, small and artisanal mines.

Open pit mining and stripping is done by removing soil and vegetation from the surface to access the ore. Explosives are often used widely spreading chemicals and dust including into rivers, and the waste generated by the mining activities may contain a high concentration of metals and metalloids, leaching into ground and surface water. The adjacent photo of Nchanga mine shows the mosquito breeding- and malaria- risk of surface water collecting in open pit mining.



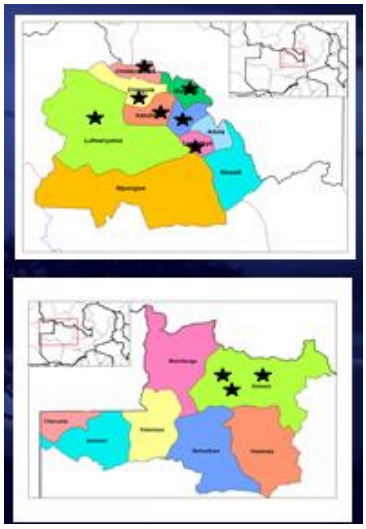
Underground mining produces dust, noise and in some mines sections heat and gases, such as sulphur dioxide. Workers also face risks of pneumoconiosis due to poor ventilation, and of rock falls causing injuries that may be fatal. These mines also raise the risk of contamination of water from the chemicals used in processing the minerals and acid mine drainage. The photo adjacent shows the conditions in Nkana underground mine .

Dr Mwansa raised further the risks to people living around mines. He pointed to the bioaccessibility of inorganic contaminants in soil in areas around the copper smelters, with smelting activities polluting soils. He referred to one assessment that found various metals (copper, cobalt, lead, zinc) in high concentrations in areas around Nkana and Chingola smelters. These pollutants present a severe health risk.

He noted that the health risks lead to respiratory, skin diseases and metal poisoning in exposed populations. Controlling these risks calls for enforcement of laws and regulations on permissible levels; primary prevention activities (eg good mining methods; control of dust); medical surveillance and site inspections; sensitization of workers and of the community and proper waste management.

3.2 Survey findings on mining, TB and health in Zambia

Dr P Lungu, National TB Programme Manager, Ministry of Health presented evidence from a survey on knowledge, attitudes and practices of mineworkers and ex-mineworkers in relation to TB and health in the mining sector in Zambia. He acknowledged LJ Podewils, D Mwakazanga and W Kasongo who implemented the survey. The survey aimed to: describe mineworkers and ex-mineworkers in the Copper belt and North-Western provinces; understand knowledge and perceptions about TB; assess prevalence of TB symptoms among mineworkers and ex-mineworkers; identify key challenges with accessing TB and HIV care and preferences for care and to listen to mineworkers and ex-mineworkers to guide recommendations for improvement of TB and HIV service delivery. The study included 2,752 participants, 1711 from Copperbelt and 1081 from North-Western province (see adjacent maps). Of these 1956 (70%) were current mineworkers and 836 (30%) ex-mineworkers.



He showed data from the survey that indicated that:

a. Mineworkers and ex-mineworkers are quite knowledgeable about TB symptoms and recognize it is curable
b. Almost 30% of mineworkers and ex-mineworkers had a cough, and 12% had 2 TB symptoms and 7% had 3-4 symptoms suggestive of TB
c. The majority understand you cannot work in the mines if you've had TB, as in current law.

Knowledge and Attitudes

Related to Ability to Work in the Mines if you've had TB (N=2,792)

	n (%)
Government policy related to working in the mines with TB	
Cannot work in mines ever	1146 (41.0)
Can work if non-infectious/ completed treatment	632 (22.6)
Can work light duty	49 (1.8)
Don't know	965 (34.6)
If you have TB, are you allowed to work in the mines	
No	1817 (70.9)
Yes/Yes after treatment	746 (29.1)
If you had TB, you would tell your supervisor at work	
No	2148 (76.9)
Yes	644 (23.1)
If you had TB, you would tell your spouse/partner	
No	733 (26.3)
Yes	2059 (73.8)

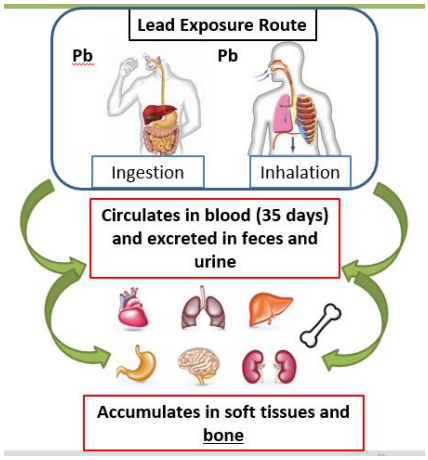
Dr Lungu showed the findings on TB and employment, shown adjacent, that indicate that current policy and law in relation to TB and employment may inhibit health seeking behavior among current mineworkers as they fear losing their jobs if found with TB. As a result 76.9% of mineworkers said they would not tell their supervisors at work if they had TB and even 26.3% said they would not tell their spouse. Dr Lungu noted that as one aspect of 'health in all policies' there is a need to address this barrier employment law is creating in case reporting, especially in the non-infectious stage of treatment and based on the health of the worker after treatment. For the current mineworkers, 73% had a TB exam when hired, but only 53% are screened for TB each year but 97% are screened annually for silicosis.

Dr Lungu raised that the weakness on directly observed treatment (DOTs) options(with many mine-workers not living with their families), the preference for public services for TB and HIV care, the inadequate current attention to family members and case tracing were lost opportunities for TB control. He raised that a collaborative effort was needed between mines and government to address these gaps in effective management and to improve TB and HIV services for mineworkers and their family, and that the law on TB and employment needed review to ensure uptake of TB and HIV detection and care without fear of losing employment.

3.3 Lead poisoning in Kabwe

Dr J Yabe, University of Zambia presented evidence from research on current trends of blood lead levels in Kabwe, Zambia, co-authored with colleagues from Hokkaido University Japan, Ministry of Health, World Bank and Pure Earth as one element within the Kabwe Mine Pollution Amelioration Initiative (KAMPAI).

Dr Yabe outlined how lead exposure takes place through ingestion and inhalation, and the potential for lead accumulation in soft tissues and bone, as shown in the adjacent graphic. The adverse effects are neurological, affecting brain development, in the blood, and toxic effects in the kidney. He noted that according to international reference levels toxicity takes place when blood lead levels are above 5ug/dl, chelation therapy is needed at levels above 45ug/dl, clinical symptoms are evident at levels above 60ug/dl and death at levels of 150 ug/dl. At the same time he noted that some people in Kabwe had even higher levels than this!



Kabwe is identified as one of the top 10 polluted towns in Zambia, with lead and zinc mining having taken place from 1902 to 1994 (see adjacent photo of Kabwe environs). It is known that the levels of lead in Kabwe soil is very high and many children have blood lead levels (BLLs) at critical and fatal levels. Dr Yabe said that many cases either don't get recorded properly or are misdiagnosed and there hasn't been an epidemiological study to link childhood mortality to lead poisoning in Kabwe. After an environmentall remediation programme BLLs declined from 2014 to 2016, declined but still exceeded reference levels in almost all those tested.

In a 2017 study of men, women and children, BLLs ranged from below the reference level to 162 μg/dL (above the level at which death is identified!) with significant difference in BLLs in different areas. Only about 20 % had BLLs below 5ug/dl and about 25% of the children had BLLs greater than 45 μg/dL (the level requiring chelation therapy). BLLs near the dump were significantly higher than those far from the mine, levels were higher in children than in adults, in males than females and in children under 3 years of age.

Dr Yabe suggested that exposure from soil (including through roots and leaves of plant food and pica in pregnant women) and inhalation of lead from mine dust carried by wind to communities could be the main routes, given that there was significantly more lead contamination on the windward side of the mine compared to the leeward side. However he suggested that children may also be absorbing lead by playing on lead contaminated soils (see photo adjacent). He also observed that lead contamination may occur through placental transfer and after birth in breastfeeding.

4. Mining and health: A regional perspective

Dr Rene Loewenson, Director, TARSC/ EQUINET introduced EQUINET as a network of professionals, civil society members, policy makers, state officials in east and southern Africa that aims to advance and support health equity and social justice through research, analysis, networking and dialogue. One of the issues that EQUINET has explored is the promotion of health in the extractive industries in the region, particularly in terms of the current protections and laws as a basis for regional health standards.

She noted that most countries in the region are richly endowed with minerals that are highly sought after in global trade, largely by multinational companies from outside Africa. Countries in the region thus face a challenge to make and implement policies that link their natural resources to improved social and economic development and to ensure that mines do not generate harm to health. With GDP growth in the region often associated with inequality, as measured by the gini coefficient, the need for a more inclusive growth path was recognised in the 2009 African Union (AU) African Mining Vision, which states a policy intention for Africa to ensure a mining sector that amongst other issues "*is safe, healthy, gender and ethnically inclusive, environmentally friendly, socially responsible and appreciated by surrounding communities*." Public health plays a key role in linking growth with inclusive social development. Yet, she noted with examples of the continued poor return for local wellbeing from mining activities, where districts with large mining projects have had higher poverty and food insecurity compared to other districts.

She outlined the largely preventable health risks associated with mining , including injury and hazardous working conditions; poor environments and living conditions in surrounding communities; loss of biodiversity, air, water and soil pollution; displacement of local people; and communicable disease in mine and surrounding communities. She noted that while the risks to workers are often well recognised, and while there has been more attention recently on TB and HIV in and around mines, the rapid population growth, displacement, pollution and poor conditions arising as people move into mining areas with limited public revenue for infrastructures and services raises wider public health and epidemic risks.

Rene observed that public health law in Zambia as in many countries provides for duties to avoid harm to public health, and various international standards exist providing for health in mining, including: consultation, impact assessment and protection of health in negotiation of prospecting rights; health and social protection of displaced communities; occupational health for employed workers and sub-contractors; health benefits for workers and their families; environmental, health and social protection for surrounding communities, and remedy for harm; and making fiscal contributions for health promotion and care. The SADC UNECA harmonisation of policies and standards adopted by Mine ministers in 2006 indicated that *Member States should develop, adopt and enforce appropriate and uniform health, safety and environmental guidelines for the sector as an* ***immediate*** *milestone area.* While there has been progress on doing this for TB and HIV and some attention is now being paid to chronic occupational diseases for ex mineworkers, she called for a more comprehensive focus on public health in the mines, to prevent, treat and manage the wider range of health problems experienced by communities as a result of mining activity.

Rene summarised how far these commitments are included in the laws in the region, detailed in the documents circulated to delegates. Some areas of health are better protected than others, and some countries better protected than others, as summarised below.

Area of law	Level of protection
Consultation and health protection in granting prospecting rights / licenses	Environment impact assessment provided but health assessment not provided, or health personnel/Ministry of Health not included
Health and social protections in relocation of affected communities	Poorly provided for
OHS for employed workers / contractors	OHS for formal workers relatively well covered
Health benefits for workers and families	Limited duty for health benefits or health care coverage for workers and their families
Environment, health protection for surrounding communities	Environmental protections provided; Social and health/health care protections more limited
Health benefits for surrounding communities	Most countries have no duty for mines to ensure health services for surrounding communities
Fiscal contributions from EIs for health and health services	Limited duty to make tax contributions for health. Tax duties but with options for exemption
Post-mine closure obligations	Limited provision for health duties post closure
General governance issues	Participation and information rights in environment and transparency laws

While no single ESA country provides adequate legal protection, different countries have good practice clauses that could be used for regional guidance on minimum standards, and in particular she highlighted some key areas that may need to be advanced, through the multisectoral co-operation that is being promoted within 'health in all policies':

- Approval of mining licenses are in many countries now subject to environment impact assessments, but these do not always include health impacts. She noted that section 80 of Zambia's Mines and Minerals Act refers to impact assessment of both environment *and human health*, so the law in Zambia more explicitly protects health than that of many other countries in the region. However she observed that from the publicly available impact assessments the teams do not always include people with public health expertise, nor does the process involve the Ministry of Health until the review of the final report, which is late in the scoping and assessment process. She suggested that integrated environment, health and social impact assessments (EHSIA) be implemented.
- Resettlement plans often ensure basic infrastructures, but she noted that they should ensure health infrastructures and accessible health services, including community health workers and systems before people are settled.
- She indicated that the relationship between mines and local governments need to be clarified in relation to duties to ensure environmental (water/ sanitation/ waste management etc), infrastructure, prevention of harm to health of surrounding community as was demonstrated in the presentation on Kabwe; in preventing and report communicable and notifiable diseases in the surrounding community and in tax and other contributions to public health services..
- She noted the need for EHSIAs to provide plans for post closure duties for health. Zambia has a good practice in its environmental protection fund and she raised that there is a need to also provide in a similar way for post closure public health duties, including for screening, care and compensation for chronic diseases, particularly as the mining companies are often from other countries.

She concluded that having minimum standards in these areas was important to ensure that companies were held to common standards when operating in any country of the region, in line with SADC intentions to harmonise standards, but also to encourage regional co-operation in operationalising these standards, to build tools and implementation capacities and share information and good practice across the region.

5. Discussions

Participants discussed the issues and evidence raised in the presentations within two broad dimensions:

1: improving public health in the mining sector in Zambia.
2: harmonizing public health standards and strengthening exchanges in the region.

5.1 Discussion on public health and mining in Zambia

Dr Kaonga, Ministry of Health opened the discussion on the national level issues, asking

1. What follow-ups steps need to be taken to better integrate public health measures in the life cycle of mines?
2. What lessons can be drawn from experience of public health of mining including for other sectors?

In relation to the TB and mining presentation, delegates observed that the legislation is hindering mineworker uptake of health facilities as they fear loss of work and that this can lead to untreated infectious TB, widening spread. Dr Silumesi noted that work is underway to address this legal barrier. The importance of snowball case tracing and the DOTS strategy was raised for TB control and delegates agreed that measures were needed to improve the application of these approaches in the sector.

In relation to both the TB and mining and public health presentations, it was noted that the occupational health and safety law requires annual medical surveillance before, during and post-employment, but that at district level, local government, health and mining services may not be well integrated and public health services may not link ailments to one's occupation. Delegates suggested that health personnel training and practice give more focus to taking patients' social histories. While it was raised that new regulations are in process for medical checks in all sectors, not just mining, delegates perceived this as an area to strengthen practice, not only for the mining sector but for all sectors, and that it be implemented in a manner that not generate fear of loss of employment, as was observed in the presentation by Dr Lungu.

Further, while occupational health law requires medical surveillance post-employment, delegates queried whether ex-mineworkers are adequately traced, given that may have moved out of mining areas to other parts of the country. Delegates endorsed the role of the Occupational Health and Safety Institute (OHSI) to provide guidance on tracing ex-mineworkers and their current conditions to both assess them and to provide information to public health services for their follow up. At the same time delegates recognised that this calls for decentralising the OHSI to ensure that all parts of the country are covered.

In relation to the presentation by Dr Yabe on lead exposure, delegates pointed to the need to better segregate communities from areas that have potential health risk. In the discussion it was noted that mercury has also been found as a toxin in environmental assessments and a question raised on the link between this and cancer cases. It was noted that while mercury is a neuro toxin, no human data currently ties mercury exposure to cancer, but the data available are limited and no epidemiological study to assess this has been done in Zambia. DDT in contrast has been assessed by WHO as probably carcinogenic to humans. Delegates noted that it is difficult to make firm links between chemicals and cancers, it would be important for chemical contaminants to be brought to the attention of the health sector where found to be alert to health effects.

It was observed generally that these measures call for a sharing of data and information among sectors and for research to build an evidence base to support public health in mining and the costs of not addressing it. The Health in all Policies (HiAP) approach intends to provide one approach for integrating health in other key sectors and to facilitate the dialogue platform between sectors for this.

5.2 Discussion on regional standards and co-operation

Dr Kaonga, Ministry of Health opened discussion on the regional issues, asking

1. What areas should be included in harmonising standards of mines in the SADC region?
2. How can regional cooperation and exchange support good practice nationally?

A constructive exchange on the interaction between health and environment raised a number of ways of implementing the legal provision for impact assessment of human heath, with contributions made by Mr Nyoka of ZEMA.

It was noted that while the law does already provide for human health impacts to be assessed, and while EIAs do assess social issues and take note of health, the inclusion of health in the process can be strengthened. At present delegates were informed that where needed a special separate study on health can be conducted, as a strategic assessment, such as where a project raises a specific health risk like malaria.

However, it was suggested that health be integrated within all EIAs as Environment, health and social impacts assessments (EHSIA). Delegates observed that health could be brought in from the onset, to review the CVs of the teams contracted to implement the impact assessments to ensure adequate public health capacity, and to bring health personnel into the stages of decision making, oversight and review at the relevant steps of the EHSIA process. Rather than being presented with a large final report to comment on, that may be given less attention, this involvement from the onset, will enhance the engagement with the process as a whole, and improve the way health is addressed within the process.

With respect to the point raised in Dr Loewenson's presentation on the management of post closure risks, it was noted by the ZEMA delegate that there are two funds that protect longer term and post closure risks to the environment, the Environment Protection Fund- under the Mines and Minerals Act and the Environmental fund under the Environment Management Act. The latter intended to complement the funds under the Mines and Minerals Act to cover other sectors. It was suggested that where there is clear supporting evidence, such as from the impact assessments or specific surveys, these funds could also address human health impacts from mines post closure.

Several other areas were identified where regional co-operation and exchange would benefit national processes.

- It was suggested that having a data base at regional level with shared information on the health and environmental assessment reports would facilitate exchange of evidence, experience and learning, particularly as mine processes and companies cross borders.
- It would be useful to have regional classifications and reference level standards for pollutants that have been developed taking into account the features of the population in the region (including issues such as their background nutritional status).
- There is need to boost laboratory and technical capacities in countries to support decentralised health impact assessments, and there is scope for regional development of tools and training programmes for this.

Generally delegates voiced support for having harmonised regional health standards in mining, noting the involvement of common companies and processes across countries in the region in the sector, the cross border movement of mine-workers, and the value of regional co-operation in strengthening capacities and sharing information and good practice in this area.

6. Recommendations

Dr Loewenson, EQUINET summarized the key recommendations arising from the discussions in the meeting.

At national level, delegates recommended:

1. *In relation to TB and health in mineworkers and ex mine-workers*
   a. Develop approaches to strengthen implementation of public and community health approaches ion the mine for snowballing / case tracing; for implementing DOTS where workers are not living with their families;
   b. Revise the labour law and company practice to remove barriers to workers using services to detect and treat TB due to fear of lost employment; allowing for return to work approaches after the infectious and based on the health of the worker.
   c. Train and encourage public health personnel to take social histories to make more effective diagnostic links between health and employment.
   d. Support the current processes for expanding regular medical checks to all sectors (in approaches that do not lead to fear of job loss).
   e. Decentralise the OHSI and apply measures to track and ensure monitoring of ex mineworkers, including when they migrate out of mining areas.
2. *In relation to strengthened links between health and environment*
   a. Improve implementation of the current Mines and Minerals Act by integrating HIA within Environmental Impact Assessments (as EHSIAs) on a routine basis through Ministry of health review of assessment teams, inclusion of public health capacities in the teams, health sector inclusion in the review at key stages and of final reports
   b. Include health (and health personnel inputs) in the environmental audits for the Environment Protection Fund to include measures to address identified longer term and post closure risks to health in mining
   c. Strengthen the platform for health and environment links through more regular forums / dialogue between Ministry of Health and ZEMA and other key stakeholders, to support the measures above and in line with the 2008 Libreville Declaration on Health and Environment in Africa.
3. *In relation to public health of communities on and around mines*:
   a. Engage local authorities and strengthen health and local authority co-operation to improve the segregation of communities from areas where pollutants generate risk to health and to implement other relevant public health measures.
   b. Raise awareness of and better enforce the current law (and public health provisions on duty to avoid harm to health) to ensure risks are controlled by mines at source.
   c. Sensitise local communities, including through health literacy, on acute and chronic public health risks in mining and prevention and control measures, including by raising awareness of cases of toxic poisoning.
   d. Widen monitoring and studies of the impact of mining processes and pollutants on human settlements, including water, food chains, and other determinants and on human health and development.
   e. Promote (local) technologies for controlling contamination harmful to health.
   f. Strengthen dialogue and multisectoral co-operation on protection of public health in mining, including through the Health in all Policies (HiAP) approach.
4. *Implement and advocate for increased local research* in public health in specific mining sectors and communities to provide evidence to inform that policy decisions, including on the cost-benefit of investing in prevention and on quality of life indicators in public health.

At regional level, delegates recommended:

1. *Supporting measures to harmonise regional standards on health in mining:*
    a. Integration of health in Environment Impact Assessments as EHSIAs.
    b. Addressing health infrastructures and services in resettlement of displaced communities.
    c. Preventing and addressing long term, chronic health impacts post closure.
    d. Harmonising clarification system and reference standards for pollutants and exposures based on regional evidence
2. *Advancing harmonised standards:*
    a. Holding a technical meeting in SADC on harmonised health and environment standards and joint health and environment dialogue on regional standards
    b. Engaging the SADC standards committee to raise health and environment as a joint agenda item in the harmonisation of standards in mining in the region.
3. *Sharing information at regional level on public health in mining,* including
    a. Through a regional database of health and environment impact assessments to enable sharing of information on health impacts identified
    b. A regional repository of evidence from surveys on health impact assessments of specific mining processes, including of chronic health risks in ex mineworkers; and of cross border health risks from mining, such as of water bodies
    c. Promotion of regional research on health risks and management approaches to controlling health risks in mining to address evidence gaps
4. *Regional training on implementation capacities, such as for integrated EHSIA*

7. Closing

Finally, delegates observed that the issues raised in the dialogue meeting are pertinent not only for advancing public health in mining, but for other sectors as well.

Dr Kaonga observed in his closing remarks that the meeting was an eye opener, raising important evidence and pertinent issues. He thanked all present for their contribution, in convening, participating, presenting and supporting the meeting. He indicated that the Ministry will follow up with wider stakeholder consultations on the evidence and proposals raised in the meeting in the 'Health in All Policies' approach, noting that the proposals call for ongoing dialogue and collaboration at both national and regional level. With these closing remarks he closed the meeting.

Appendix 1: Programme

MINISTRY OF HEALTH ZAMBIA in collaboration with THE REGIONAL NETWORK FOR EQUITY IN HEALTH IN EAST AND SOUTHERN AFRICA (EQUINET)

MEETING ON MINING AND PUBLIC HEALTH IN ZAMBIA
SBH Centre, Kabulonga, Tuesday 10 April 2018

TIME	SESSION	ROLES
8.45am	Administration, registration of participants	Secretariat Ministry of Health
09.00-09.30	Opening Meeting objectives Participant introductions Opening remarks	Dr W Kaonga, Dep Director, HPSDEH, MoH Delegates Dr R Loewenson, EQUINET
09:30-10:00 **10.00-10.30** **10.30-11.00** **11.00-11.30**	Chairperson, Dr. A Silumesi, MoH Mining and public health in Zambia, current context Survey findings on mining, TB and health in Zambia Lead Poisoning in Kabwe Regional policy and standards on mining and health	 Dr C. Mwansa -OHSI Dr P Lungu, TB Manager, MoH Dr J Yabe – UNZA VET Dr R Loewenson, TARSC/ EQUINET
11.30-11.45	Tea/ coffee	
11.45-13.00 **13.00-13.30**	Chairperson, Dr. W Kaonga, MoH Discussion *1:* What follow up steps to improve public health in the mining sector in Zambia? *2:* What public health standards should be harmonized across SADC countries? Summary of recommendations and next steps at national and regional level Closing remarks	 Delegates Dr R Loewenson, EQUINET Dr. W Kaonga, MoH
13.30-14.30	Lunch	
	End	

Appendix 2: Delegate list

1	Dr V Chalwe, Deputy Director, National Health Research Institute
2	Dr John Yabe, Lecturer, University of Zambia
3	Dr Conrad Mwansa, Director, Occupational Health and Safety Institute
4	Dr Wezi Kaonga, Assistant director, Environment and social determinants, MoH
5	Dr Patrick Lungu, National TB Manager, MoH
6	Dr Andrew Silumesi, Director Public Health, MoH
7	Mr Maxwell Nyoka, Director operations, Zambia Environment Management Agency
8	Ms Chilekwa Mibenge, Chief Environment Health officer, MoH
9	Mr Elite Mhone, Senior Mining Engineer, Ministry of Mines
10	Mr Andrew Phiri, Communications officer, MoH
11	Dr Rene Loewenson, Director, Training and Research Support Centre, Zimbabwe Cluster lead, EQUINET
12	Ms Judy Lunga, Ministry of Health
13	Ms Emeldah Njovu, Ministry of Health

Apologies

1	Dr Abel Kabalo, Director, HPSDEH
2	Dr Emmanuel Makasa, Ministry of Heath
3	Ministry of Local government
4	Ministry of Labour
5	Ministry of Community Development
6	Ministry of Commerce and Trade