

TAILINGS STORAGE FACILITY TOOL KIT

Mine Safety Department (MSD)

Aaron Soko Jackson Kafwanka Abiyudi Sakala













The stability and maintance of tailings storage facilities (TSFs) are essential to protect pollutants from entering the water ways thereby contaminating aquatic life and disturbing habitations. If a TSF fails, large volumes of tailings can cause catastrophic impacts leading to long term social costs in terms of poor health, loss of income and livelihoods that result from degraded environment.

There are no standard guidelines to guide technical staff on how to conduct geotechnical related inspections on dam facilities. There are also dependancy of TSF inspections to one section (Environment Section only). The change project wanted to enhance the capacity to conduct broad and accurate inspections on the (TSFs).

The department's goal regarding the project is to ensure safety of employees, property and communities, promote clean water discharge, health, society and food security and to have an integrated approach to dams management for safe and stable dams. Furthermore, the long term vision is to make this project part of the many orientation programs to all new staff that may join the institution.

This was important to the organisation because it developed standard guidelines to guide technical staff on how to conduct an inspection on Tailings Storage Facilities(s). It refocused some neglected mandates which were perceived as specific to the Environment sectional one and not to the other related sections of the department. It also develops a sense of responsibility to the mining companies to improve the technology of managing their TSFs



MSD official having stakeholder engagement with mine owner.



MSD and Kalumbila officials on embankment of Kalumbila TSF.



With stronger competence in inspection of TSFs as well as standard guidelines to help guide technical staff at MSD, risks for dam failure or leakage can be lowered. The project helps to ensure safety of employees, property and communities, promote clean water discharge, health, society and food security and to have an integrated approach to dams management for safe and stable dams.

The project also has significant impacts on businesses because it will highlight and emphasize the possibility of having businesses produce less waste (meaning less pollution), which may come from excavating huge volumes of material at lower costs, through technological improvements in milling and other processes such as concentration and bulk mining. Some examples of technological changes in variances are dry stacking, paste tailings and use of centreline as opposed to upstream dam designs. These changes offer lower consequences in event of failure.



Field work with Kalumbila and MSD officials.



During the ten month period the team managed to produce the tool kit guideline. Methods included literature studies as well as consultations with other stakeholders, such as ZEMA and operators.

The team also reviewed a current checklist being used by KML and documented a world best practice checklist for reference. Additionally, the team shared with the Kalumbila Mine the final outlook of the toolkit for comments and requested for comments inform of a checlisted questioner. Notes were compared with with ZEMA and KCM was informed to be one of the main companys to start considering the demands of the project beyond the 10 months.

SIGNIFICANCE FOR THE PEOPLE AND THE ENVIRONMENT

RESULTS AND ACHIEVEMENTS



As of now, the toolkit guideline has been sent back to the hosting mine who were asked to look at the document and answer yes and no against each item on the checklist, and then comment on the tool kit. This procedure was necessary as the mine is the major stake holder in terms of operation, maintenance and safety.

Once commented, the document will be shared to all officers in other stakeholder institutions.

The regulating officials and communities are indirectly and directly affected. The beneficiaries are the implementing companies and governing authorities. The informed are all stakeholders involved such as:

- Zambia Environmental Agency (ZEMA),
- Water Resources Management Authority (WARMA),
- Engineering Institute of Zambia (EIZ),
- The City Councils (Local Authorities),
- Non-Governmental Organisations (NGOs),
- All Mining Companies and Communities.

There are also further activities planned for after the change project period is finished:

- Booklet shall be sent to all stakeholders for comments by a specified date December 2019.
- Scheduled meetings shall be made for discussing and commencement of implementation.
- Mine inspections incorporating scheduled mine visits shall be done
- Community sensitisation by local authorities



THE WAY **A** FORWARD

• Radiation Protection Authority (RPA),

The change project team together with mentor Pontus Westrin.