

ZAMBIA



Mine Inspector's Handbook – A Guide for Inspecting a Tailings Storage Facility

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**INTERNATIONAL TRAINING
PROGRAMME 308**
Mine Water & Mine Waste Management



THE CHANGE PROJECT

Zambia is one of the largest producers of copper in the world and has a rich mining history dating back more than 100 years. The country possesses one of the world's highest-grade deposits of copper and is also home to exploitable deposits of cobalt, nickel, and manganese. Copper contributes over 70 percent of the country's foreign export earnings making mining a major economic activity for Zambia. However, mining is equally a major source of environmental pollution in Zambia arising mainly from poorly managed mining facilities such as tailings storage facilities (TSFs) and waste rock dumps. Collapse of TSFs, untreated effluent discharges, air pollution among other issues poses greater danger to the environmental and people.

Mining in Zambia is regulated by different pieces of legislations including the Environmental Management Act, No. 12 of 2011 and the Mines and Mineral Development Act, No. 11 of 2015. These legislations give powers to enforcement agencies such as MSD and ZEMA to licence and monitor mining operations and ensure safe mining and environmental protection. Enforcement Agencies deploy Inspectors to inspect mine facilities regularly in line with their respective mandates. However, mine Inspectors often lack the necessary technical tools to guide them for efficient and effective monitoring and inspection of various mining facilities. This contributes to poor reports and flawed decisions during permitting.

Mine Inspector's Handbook is a technical tool to guide the Inspector's conduct during inspection of TSFs in Zambia ensuring their safety and protection of the environment. It also aims to promote and align a mine Inspector to best industry standards and practices, and develop necessary skills for monitoring tailings management. The handbook seeks to guide an Inspector to always ensure that a TSF throughout its operational life and after closure is:

- Designed, constructed, operated, monitored and closed in accordance with the provisions of Mines and Minerals Development Act, Environmental Regulations and other relevant regulations;
- Safe and structurally stable
- Managed to minimize impact on public safety, public infrastructure and the environment
- Rehabilitated to minimize social impact, adverse visual amenity and long-term risk and adequately manage:
 - Water stewardship
 - Biodiversity conservation management
 - Climate change
 - Indigenous and community relationships
 - Safety and health
 - Crisis management and communications planning.

The handbook is still undergoing development by

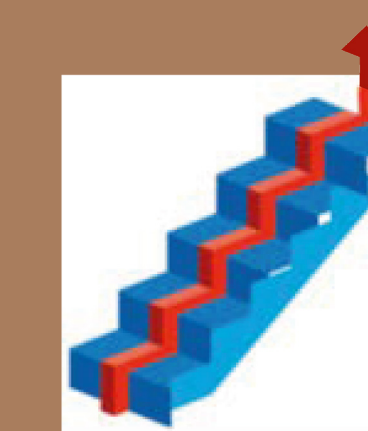


SIGNIFICANCE FOR THE PEOPLE AND THE ENVIRONMENT

Poor management of mine waste (tailings) negatively results in the pollution of the physical environment. The increase in the number of TSF collapse coupled with regular discharge of untreated effluent by extractive industries in Zambia has led to contamination of land, water and to some extent compromising the health of people in mining communities and beyond. Regulating the mining companies in line with the guidelines provided in the handbook is essential for safeguarding human health, protection of biodiversity and minimizing the negative impacts associated with TSF management. An Inspector who is technically developed with the necessary skills for TSF management is an agent for the promotion of sustainable mining and is a force for mitigating environmental harm through enforcement. The handbook will greatly contribute to skill development for mine Inspectors and in return lead to reduced number of environmental pollution incidents.



ITP308 Group 7. Drafting of handbook has taken into consideration what has already been developed by ITP308 groups from 1-6 (Toolkits and National Guidelines on Management of TSF and Waste Rock Dumps). However, unlike the toolkits and the National Guidelines which focuses on guiding the mining entities on the development and operations of TSFs the handbook focused on guiding the Inspector on how/what to inspect on the facilities.



RESULTS AND ACHIEVEMENTS

The handbook is been developed with wider consultations with experts both from extractive industries and regulatory bodies. The major task undertaken by the project team include data collection, literature review, informal discussions with environmental Inspectors, structuring the handbook in terms of content (identifying key topics) and preparing a draft handbook. During the period between June 2023 and February 2024, the project has progressed with the main results being:

- Developed a draft handbook with some key topics been included.
- Obtained more insights from practical experience of fellow Inspectors when inspecting mine facilities such as tailings dam.
- Review and consultation on the regulatory requirements for establishing key mine facilities such as the tailings dam providing a good framework for the handbook.
- The level of support obtained from fellow Inspectors offering positive feedback through their verbal comments.



THE WAY FORWARD

During peer review of the draft work with Inspectors, it has been observed that recently recruited Inspectors within ZEMA have shown interest in the handbook to help them enhance their skills during inspection of TSFs. The interest from new Inspectors has emphasized that the overall goal of the project is relevant and realistic. However, due to the short period for the development of the project, modifications have been proposed to be made which include:

- i. Developing procedures for physical inspection/or monitoring of active, decommissioned, and abandoned Tailings Storage Facilities (TSFs) only. Initially the intention was to incorporate procedures under the Environmental Impact Assessments (EIA) process starting with project screening (proposals for establishment of TSF), review of draft EIA reports, stakeholder engagement through site verification inspections.
- ii. Base inspection procedures on the legal requirement under the Environmental Management Act, No. 12 of 2012 and the Mines Mineral Development Act of 2015 only. Therefore, little or no effort has been made into other laws such as the Water Resources Management Act, The Radiation and Ionizing Act.