

KAZ
MINERALS



Tailings Challenges for Operators

Second meeting of the Working Group on Tailings Safety and Prevention of Accidental Water Pollution in Kazakhstan

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Where action is best taken

- ▶ To prevent problems with tailings facilities, we need to start as early in the process as possible.
 1. Investigation/Design
 2. Construction
 3. Monitoring
 4. Operations and governance
 - ▶ Everything after design is just playing catch-up.
 - ▶ Everything after the above list of 4 is too late and a disaster has already occurred.
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- ▶ That was horrific footage and shocked the world.
 - ▶ Who knows how to design against that type of failure?
 - ▶ Who knows how to test for and assess the design parameters to prevent a failure like that?
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Design Improvements

- ▶ It is possible to design against those outcomes but we need to improve the understanding of modern design techniques in design institutes and regulatory bodies of Kazakhstan.
- ▶ Design institutes in Kazakhstan that are both licenced to achieve state expertise and can prevent the outcomes shown in that video have not shown themselves. Modern design concepts for earth structures are necessary. If any can show that they are able then please come forward.
- ▶ Is the training for this kind of soil mechanics is not available in universities in Kazakhstan?
- ▶ We need to allow the most experienced and up to date designers the ability to achieve state expertise because right now I am paying for designs that meet international standards and then separate designs to pass state expertise.
- ▶ ~~Kaz Minerals use the most experienced and modern designers, inspectors and advice wherever possible but we meet our legal obligations.~~

Operational and Construction Monitoring

- ▶ No matter how rigorously we do the investigation and design, there are always changes or errors that must be monitored and acted on.
 - ▶ Therefore real-time monitoring that is watched, assessed and linked to a trigger plan is essential. Many global standards, including GISTM, call for it.
 - ▶ Kaz Minerals is in the midst of instrumentation upgrades across all of its operations and has implemented rigorous construction testing and monitoring.
 - ▶ The country needs more monitoring, more often and people who understand and act on the monitoring results.
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Conclusions

- ▶ I am want to convince leaders that the consequences of a TSF failure are too high to accept the current methods and risks. Kaz Minerals is 4 years along that path.
 - ▶ The way that we've done things in the past is not good enough and all of us need to improve and learn the latest techniques, from the best schools.
 - ▶ Just because it hasn't happened on your site in the past does not mean that it can't happen on your site in the future. Everything must modernise as we learn more and get better.
 - ▶ We must eliminate more of the risk to us and to our people than we currently do because we now know better.
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Trent Collins
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Questions and Discussions