

Case Study

Copper Mining in the Andes

In Chile, copper ore is mined high in the Andes. Many of these mines crushed, ground and carried out initial processing of the ore at sites near the mine. The copper concentrate was then trucked down narrow mountain tracks for distances exceeding 160 km to smelters or to ports for export. In winter transport could be delayed for weeks due to snow. The steep sided mountain valleys near the mines were used for tailings impoundments. This required construction of high dams to allow the storage of large volumes of tailings. There was a growing risk of downstream damage if the dams failed.

Exercise

Consider strategies balanced with operational practicalities, that could be used at the mine planning stage to reduce the risk of tailings dam failures as well as to overcome the transport problems posed by the prevailing terrain and climatic conditions.

A Solution

The ore was still crushed and ground at the mine, ready for processing. It was then carried by pipeline or concrete flumes about 80 km down to flatter land. The processing plant and tailings impoundment were constructed on this more suitable terrain.

The positive outcomes included:

- Reduced distance for transporting concentrate;
- Safer tailings storage facility with great capacity; and
- Better climate at lower levels advantageous for both construction of the tailings dams and for transporting the concentrate.

Source: ICOLD and UNEP (1999) Bulletin 121 *Tailings Dams Risk of Dangerous Occurrences: Lessons learnt from practical experiences*.