

Baia Mare, Romania Cyanide Spill

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Introduction

The Baia Mare Cyanide Spill, or the Baia Mare disaster, was a vast water quality issue that occurred in Romania on January 30, 2000. The spill released about 3.9 million cubic feet of cyanide and water contaminated with heavy metals into regional rivers². This happened when a dam burst, releasing chemicals into the Sarsar River, then spreading into the Lapus, Someș, and Tisza Rivers. It took almost two weeks for most of the cyanide to travel down the river and spill out into the Black Sea². The spill had a significant impact on aquatic life as well as many water sources for people. These effects are thought to have an impact lasting for years⁴, and the exact timeline is unknown.



Figure 1: contaminated water in river

Metal Mining Gold Mining

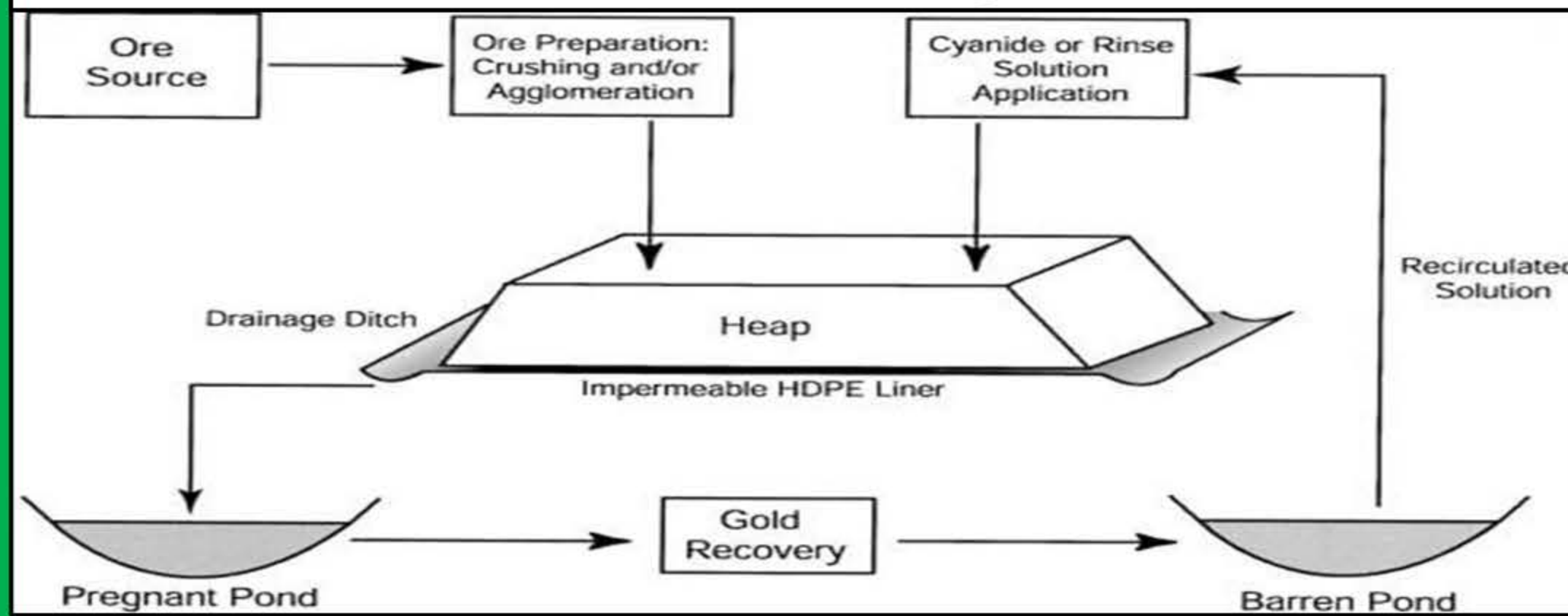


Figure 2 Heap leaching process

Cyanide Heap Leaching

- A cyanide solution dissolves the gold from the crushed ore by being poured/sprayed over the top. The liquid collected containing the metals are then treated with a carbon material to extract the gold.⁹
- The cyanide solution is either reused or stored/disposed of.⁹
- Mining tailings are the waste remanent left over from a mining operation.⁹
- When using cyanide while mining like Baia Mare, the tailings become highly toxic.⁹
- Tailings are piled and held in place by dams made of soil.⁹

Environmental and Health Impacts

Environmental

- Cyanide is extremely toxic to humans and wildlife.
- Many ecosystems revolving around the rivers were impacted, such as birds, fish, and plants.
- Soil quality was affected and will be long-term.⁶
- Farm crops were contaminated with chemicals after the spill.⁶

Health

- Short-term exposure to cyanide can cause many ailments such as: neurological, respiratory, and cardiovascular issues.⁶
- Long-term exposure can increase the risk of cancer, cause birth defects and cause other chronic issues.⁶
- The people in the affected area now have a fear that their water is contaminated and that a disaster like this could happen again.⁶
- Workers in the Baia Mare mine suffered cyanide poisoning.
- Many communities suffered from drinking water shortages because they got water from the affected rivers.⁶
- The sale and consumption of fish sourced from the Tisza and Danube Rivers were disrupted.⁶



Figure 3 dead fish pulled from well



Figure 4 Polluted water flooding village

Areas Impacted



Figure 5 Map of affected area and measured conc.



Figure 6 Affected region

Remediation Efforts

- The first step was to clean the contaminated water and contain the spill.²
- Contaminated soil and plants were removed.²
- Water was treated to remove the cyanide.
- Native plants were reintroduced in order to restore the devastated environment and prevent erosion.²
- Native fish species were restocked and reintroduced into the ecosystem.²
- Water quality of the affected rivers was monitored closer than before the spill.²



Figure 7 Straining of material from river

Legal Outcomes

- The Romanian government took legal action against the mining companies for the poor regulation of their mine.³
- "Prime minister Viktor Orban said his country is planning three lawsuits: against the Romanian-Australian gold mining joint venture, its Australian parent company and against Romania in the international courts for compensation"⁷
- The Australian mining company, Esmerelda denied responsibility and stated the extent of the spill is being exaggerated.⁷
- The lawsuits could raise tensions between the countries affected.⁷

Future Prevention

- The regulations of the mining industry now have the goal of making mining more sustainable.
- Governments gained the power to regulate, inspect, fine, and shut down mines in their jurisdiction.³
- Mining operations are being run better with enhanced chemical storage and handling, as well as improving the training of their workers.³
- Before the start of any mining project, there is now an environmental impact assessment done.³
- Communities being affected by mine sites were able to express their thoughts.³
- The use of alternative mining methods that are less harmful to the environment are used more widely than before.⁶

Conclusion

The Baia Mare disaster serves as a great reminder of the impact humans have on the environment and the importance of keeping the impact to a minimum. All remediation efforts that were taken after the spill were needed by all measures to attempt and minimize the damage dealt. The spill's impacts were felt for years following the disaster and are most likely still present today. As time goes on, mining companies and regulatory bodies need to work together to ensure the longevity of mining while mitigating the environmental hazards involved.

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