

# Open Pit Mining





# Open pit exposing diamond gravel





# Oranjemund diamond mine S.



# Miners Search for Ore

- A rock containing valuable minerals



# Ore may not be obvious

- Not all ore is high grade
- Sometimes nothing of value is visible
- You may still be sitting on a fortune
- Geochemical testing and an understand of what rock could potentially have ore are important for exploration



## CYANIDE HEAP LEACH MINING

1 The ore is dug out of the pit by blasting and crane shovels. Some of these pits are so large that when fully excavated they are more than 300 metres across and 1.5 km deep.

2 Approximately 200 tons of rock will yield 1 ounce of gold. Huge piles of waste rock can leach toxic metals and acids.

200 tons waste rock

40 tons ore

1 ounce of gold

WASTE ROCK

PIT

3 The ore is driven to the top of the pit and dumped on open heaps, and flattened out by a bulldozer.

4 A weak cyanide solution is sprinkled on top of the heap and seeps through the pile, leaching the gold out of the ore.

HEAP

HEAP

MAKEUP  
TANK

7 Once the gold is extracted, the cyanide solution returns to the makeup tank to be reused.

5 The gold-bearing cyanide, called the 'pregnant solution' reaches a sloping rubber pad under the heap and runs into dams and from there runs into a rubber lined reservoir.

DAM

DAM

DAM

PREGNANT SOLUTION RESERVOIR

6 The pregnant solution is pumped into the processing plant.

PROCESSING PLANT

8 After purification, the gold is poured into molds to make bars and traded. More than 80% of gold is used in jewellery, the rest is bought by investors or used in electronics.

# Cyanide disaster Baia Mare, northern Romania, Feb. 2000



## Spread of the Cyanide Spill, 2000

- 1 30 January**  
Cyanide spill occurs at Baia Mare, Romania
- 2 1 February**  
Spill plume reaches Romanian-Hungarian border
- 3 5 February**  
Cyanide registers in tests at Tiszalök
- 4 9 February**  
Spill plume reaches Szolnok
- 5 11 February**  
Crosses the Hungarian-Yugoslavian border
- 6 13 February**  
Plume reaches Belgrade, (Perlez), Yugoslavia
- 7 15 February**  
It meets the Romanian border again, at Ram
- 8 17 February**  
Cyanide shows up in tests at Iron Gate, Romania
- 9 25-28 February**  
The plume reaches the Danube Delta



Illustration by Christina Nicholas

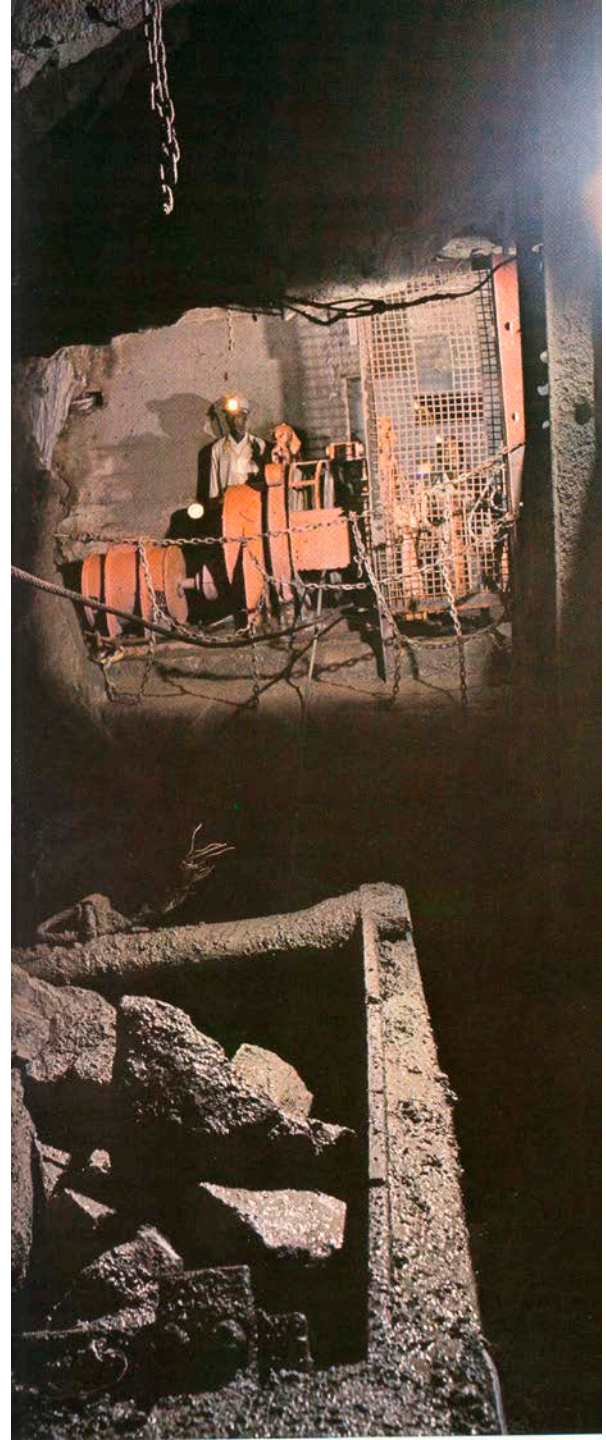


# Underground Mining



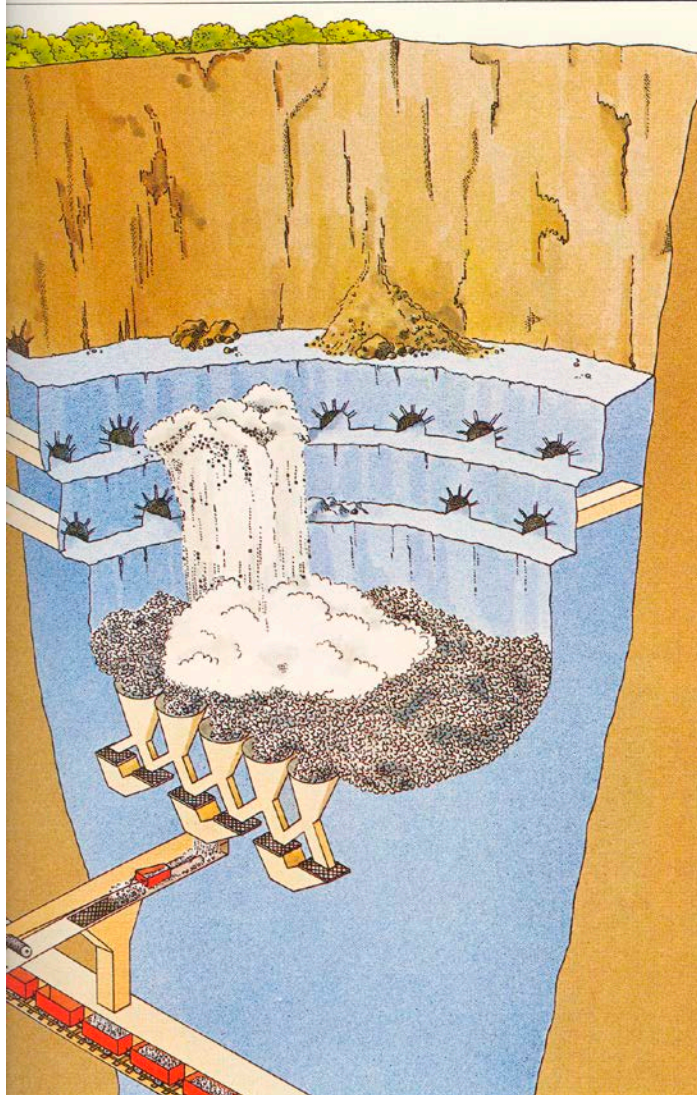
# Dangers

- Mine Collapse
- Rock blasts
- Suffocation
- Heat exhaustion
- Silicosis
- flooding





# Why underground?



# Getting the ore

