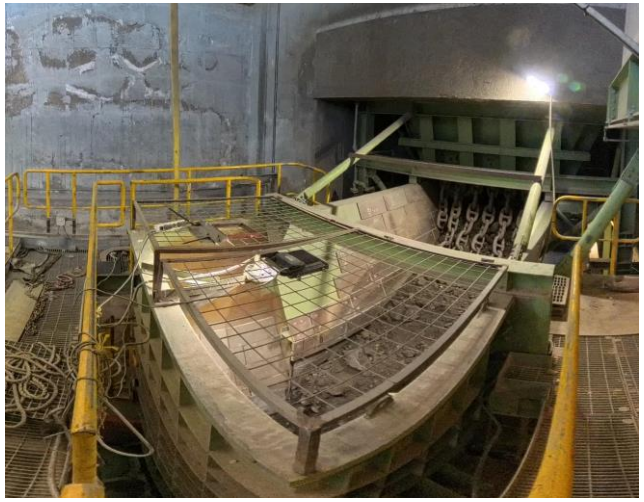
Olympias

Grinding Unit



CRM: Arsenic

Overview

VE

Uses of As & Cu

Disclaimer

Location

VEs Map

CRM: Copper

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Overview

General Information

EldoradoGold is a Canadian mining company that has actively mining activities in different countries around the globe. Especially in Greece, the EldoradoGold department, franchised as HellasGold SA, focuses on mining activities at the Kassandra mining site in Chalkidiki. The Greek Multi-Metalic Ore deposit contains the following metals:

1) Critical Raw Materials such as Arsenic (As) and Copper (Cu)
2) Precious Metals such as Gold (Au) and Silver (Ag)
3) Base Metals such as Lead (Pb) and Zinc (Zn)

Kassandra industrial unit of Grinding in Chalkidiki implements mining processes to minimize the size of the mining ore that contains Arsenic and Copper.

Grinding - Info | **Criticality of CRMs** | **Machinery Equipment**

Machinery Equipment

1st Step of Grinding

The extractive mining ore, primarily enters the 1st step of grinding. Due to the huge size of the mining ore pieces, the first step of grinding is achieved using drumsticks.
The primary ore coarse material is fed to the enclosed drumsticks to avoid human entrance, for safety reasons.

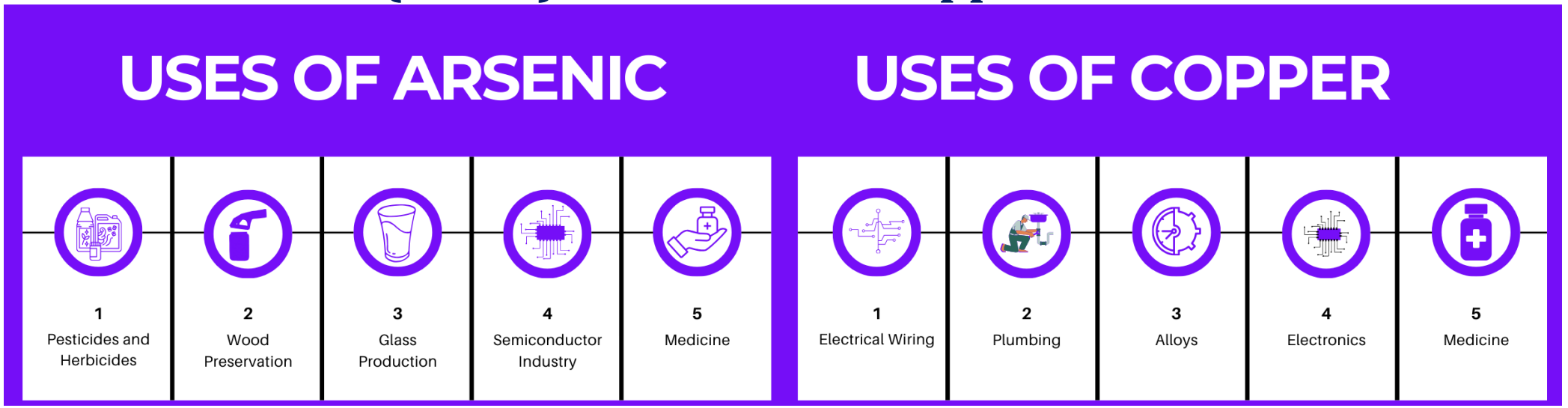
2nd Step of Grinding

The mined ore that is exported from the 1st Step of grinding enters the 2nd step of grinding to reduce its size to approximately 100 mm. The fine ore bin that collects the medium-sized raw material has a capacity of 1.155 tonnes.

3rd Step of Grinding

The mined ore that is exported from the 2nd Step of grinding enters the 3rd Step of grinding to reduce its size to approximately 13 mm. After the 3rd grinding Step, the raw material enters the milling machine, which uses metallic spheres, to reduce its size to 120 μm before the beneficiation.

Spontaneous Metals (As, Cu) and Industrial Applications



Arsenic (As) CRM

Arsenic occurs as a chemical compound of FeAsS known as Arsenopyrite.
To enrich Arsenic, the mining ore is purified after its grinding to a size of 120 μm.

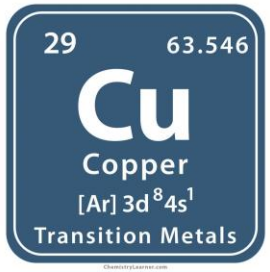
Copper (Cu) CRM

Copper occurs as a chemical compound of $CuFeS_2$ known as Chalcopyrite.
To enrich Copper, the mining ore is purified after its grinding to a size of 120 μm.

CRMs – Arsenic (As), Copper (Cu)
Click to see Criticality Assessment of As & Cu

Supply Risk: Risk Grade of the material resources
Economic Importance: Grade of the material's price value to the market
Criticality: Grade of material's impact on the Market

CRM	Supply Risk SR	Economic Importance EI	Criticality CR
Arsenic (As)	1.9	2.9	5.51
Ranges for SR, EI, CR	0-5	0-9	0-45
Impact on SR, EI, CR (%) (Numerical Value of the CRM) ÷(Maximum Threshold)	$(SR)_{CRM} \div (SR)_{Max}$ 38%	$(EI)_{CRM} \div (EI)_{Max}$ 32%	$(CR)_{CRM} \div (CR)_{Max}$ 12.2%



CRM	Supply Risk SR	Economic Importance EI	Criticality CR
Copper (Cu)	0.1	4	0.4
Ranges for SR, EI, CR	0-5	0-9	0-45
Impact on SR, EI, CR (%) (Numerical Value of the CRM) ÷(Maximum Threshold)	$(SR)_{CRM} \div (SR)_{Max}$ 2%	$(EI)_{CRM} \div (EI)_{Max}$ 44.4%	$(CR)_{CRM} \div (CR)_{Max}$ 0.8%

Source: European Commission: Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs, Grohol, M. and Veeh, C., *Study on the critical raw materials for the EU 2023 – Final report*, Publications Office of the European Union, 2023, **https://data.europa.eu/doi/10.2873/725585**

Criticality Matrix

Criticality Matrix		Supply Risk (SR)				
		1	2	3	4	5
(CR)=(EI)*(SR)						
Economic Importance (EI)	1	**(Cu=0.4)**1	2	3	4	5 **(As=5.51)**
	2	2	4	6	8	10
	3	3	6	9	12	15
	4	4	8	12	16	20
	5	5 **(As=5.51)**	10	15	20	25
	6	6	12	18	24	30
	7	7	14	21	28	35
	8	8	16	24	32	40
	9	9	18	27	36	45

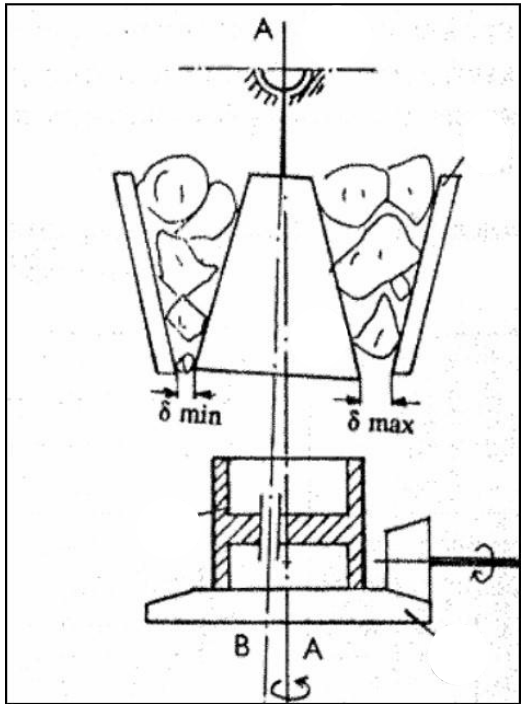
- The **Criticality Matrix** displays a quantitative assessment of the Criticality grade for each examined raw material, based on the information contained in the European Study on CRMs, as shown below on this slide.
- The **Supply Risk (SR)** and **Economic Importance (EI)** refer to variable parameters that depends on the entire resources of raw materials and their configured price values according to their demand, respectively. i.e. the SR of a raw material could fluctuate within a period. Therefore, depending on the global resources data and industrial needs, the corresponding Study for CRMs could be updated, including the existing SR and EI indices for raw materials.
- The **Criticality (CR)** is configured by the multiplication of EI and SR grades. The CR index shows the criticality grade of each examined raw material.

Source: European Commission: Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs, Grohol, M. and Veeh, C., *Study on the critical raw materials for the EU 2023 – Final report*, Publications Office of the European Union, 2023, **https://data.europa.eu/doi/10.2873/725585**

Grinding Machinery

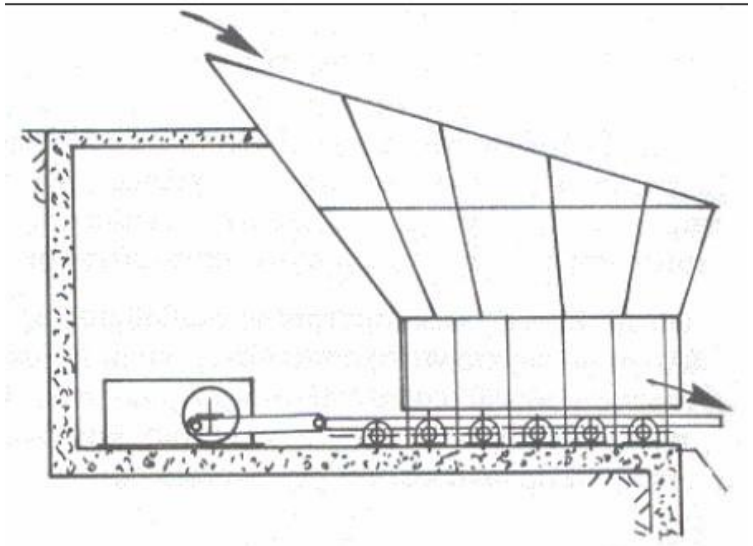
1ST Grinding Machine

It is inside the concrete wall for safety reasons
Primary Ore Grinding



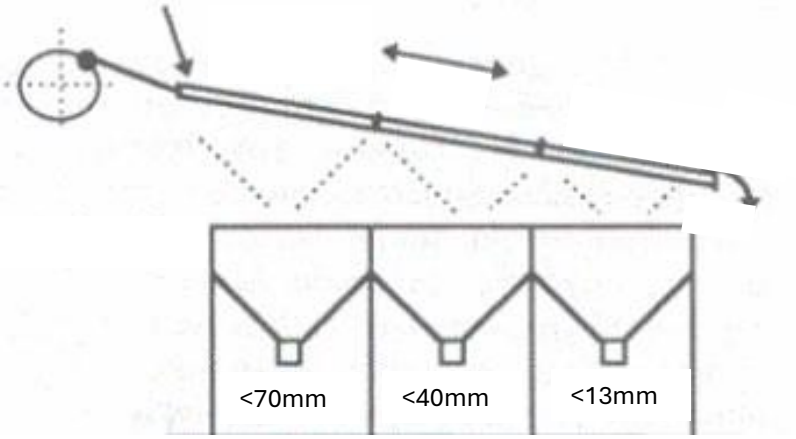
2nd Grinding Machine

Ore storage between crushing and grinding in a fine ore bin with a 1,155 t live capacity
Secondary Ore Grinding



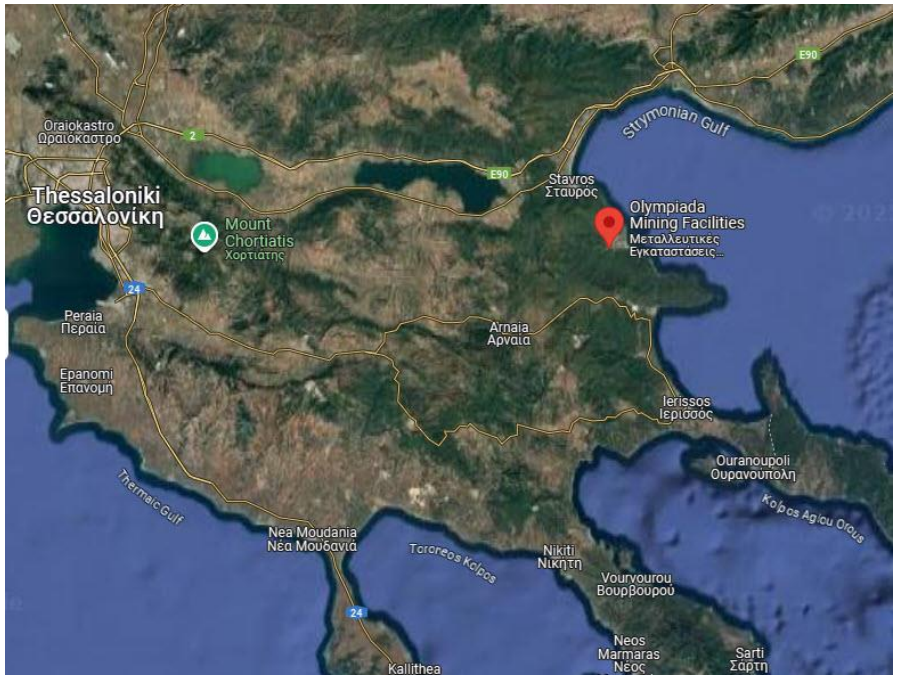
3rd Grinding Machine

Three-stage crushing to produce 80% material passing 13 mm ore
Third Ore Grinding



Source of Figures: Mechanical Study of Gravel Quarry, 2006. School of Mechanical Engineers, Patra University

Map of the Virtual Excursion



HellasGold SA_Olympias Processing Site

Latitude:E 40° 60’ 10’’_Longtitude:N 23° 74’75’’

Disclaimer

Co-funded by
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The creation of these resources has been funded by the ERASMUS+ grant program of the European Union under grant no. 2023-1-DE01-KA220-HED-000165332.