



VALUE CHAIN SERIES

GOLD

Materials & Metallurgical Society of the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Presents

Value Chain Series – Gold

Dec 6&7, 2023 8:00 AM – 11:00 AM Eastern

Mary Ann Crichton – Business (Day 1) Lead

Murray Pearson – Technical (Day 2) Lead

Chris Twigge-Molecey - Sponsorship

Boyd Davis - Series coordinator

Overall message:

Gold is an ancient commodity and has served to anchor commerce from the early days of history. The markets, deposits, and processing methods are both simple and complex. Its value as an inflation hedge and use in niche industry applications, including luxury items, makes it a difficult metal to understand. There are major gold districts in the world, but gold can be found in many geological formations, leading to the promise that anywhere could be the next major strike.

This nature of the metal as simple and complex can echo through many of the talks, reinforcing that a sound understanding of both the markets and mining is needed to succeed in gold investing.





Day 1 – December 6, 2023 8:00am – 11:00am (Eastern)

- 8:00am **Welcome & Introduction to Gold Investment**
(Mary Ann Crichton - Hatch & Boyd Davis - Kingston Process Metallurgy Inc.)
- Why gold? What is it about gold that makes it the global anchor for money *(BD)*
 - What makes gold investing different from other metals *(MAEC)*
- 08:05 am – 08:20 am **Supply and Demand Dynamics for Gold** – *John Reade, WGC*
- 08:20 am – 08:35 am **Golden Opportunities: How to Invest in Gold-** *Chantelle Schieven, Research Head, Capitalight Research Inc.*
- 08:35 am – 08:50 am **The Case for Gold as a Strategic Investment** – *John Reade, WGC*
- 08:50 am – 09:05 am **Evaluating gold stocks** – *Kerry Smith, Senior Mining Analyst, Haywood Securities*
- 09:05 am – 09:45 am **Discussion Panel & Q & A**
- 09:45 am – 10:00 am **Expanding the Universe of Exploration Capital** – *Lisa Davies, CEO PearTree Financial*
- 10:00 am - 10:15 am **ESG Considerations in Gold Investing** – *Louise Grondin, Former Sr Vice President -Environment and Sustainability Agnico Eagle*
- 10:15 am - 10:30 am **Energy Strategy and Carbon Footprint** – *Sunil Kumar, Principal, Ensky Consulting, Former VP Energy, Strategy + Engineering, Kinross Gold*
- 10:30 am -10:55 am **Discussion Panel and Q&A**
- 10:55 am – 11:00 am **Day 1 – Closing Comments, Intro for Day 2** *(MAEC)*



Day 2 – December 7, 2023 8:00am – 11:00am (Eastern)

Detailed Technical Discussions

Mining

- 08:00 am – 08:05 am **Introduction to Gold Extraction and Processing** (*Murray Pearson – Hatch*)
- 08:05 am – 08:15 am **Geology & Interpretation of Geological Data** (*Joe Hinzer, WGM*)
- Interpretation of geological data and reporting of resources per NI 43-101
- 08:15 am – 08:25 am **Exploration Programs and Challenges** (*TBD*)
- project development
- 08:25 am – 08:35 am **Mining Methods and Mine Development** (*Roy Slack, Cementation*)
- open pit mining
 - underground shaft, drifts and raises
- 08:35 am – 08:45 am **Ore Types** (*Chris Fleming, SGS*)
- Placer gold
 - Refractory sulphides (pyrite, arsenopyrite, pyrrhotite)
 - Complex polymetallic sulphides (enargite, chalcopyrite)
- 08:45am – 09:15am **Discussion and Q&A**

Processing

- 09:15 am – 09:25 am **Primary Processing of Gold** (*Peter Lind, Eldorado Gold*)
- What are the main processing methods for extracting gold?*
- Comminution (crushing, screening, and milling)
 - Gravity separation of placer gold
 - Cyanide extraction of disseminated gold
 - Pressure oxidation of refractory sulphides
- 09:25am – 09:35 am **Alternatives to Cyanide Extraction Processes** (*TBD*)
- Thiosulphate processing and regeneration
 - Other alternative processes and challenges
- 09:35am – 09:45 am **Removal/Recovery of Cu & Au from Polymetallic Minerals** (*M. Pearson - Hatch*)
- Cu removal as a necessary evil
 - Cu and other critical minerals recovery (economic value)
 - Economics of polymetallic recovery
- 09:45 am – 09:55 am **Precious Metal Recovery** (*TBD*)
- Carbon-in-leach (CIL) and Carbon-in-pulp (CIP)
 - Zadra - ADR process
 - Merrill-Crowe process



- 09:55 am – 10:05 am **Tailings/Residue Management** (*Rafael Dávila, Hatch*)
- CIL/CIP tailings neutralization and thickening
 - Conventional tailings and effluent impoundment
 - Tailings filtration and dry stacking
- 10:05 am – 10:15 am **Effluent Treatment** (*Nolene Ahern, SGS Natural Resources*)
- Solution neutralization/residual metal precipitation
 - Cyanide destruction
 - Zero effluent discharge
- 10:15 am – 10:25am **Refining and Recycling of Gold** (*Vicken Aprahamian, Canadian Mint*)
- 10:25am – 10:55am **Q & A**
- 10:55am – 11:00am **Day 2 – Closing Comments** (*Boyd Davis - Kingston Process Metallurgy Inc.*)