

EnviroLeach Technologies, Inc.

Developing environmentally friendly and sustainable solutions for the extraction of precious metals for the Mining and E-waste Sectors...

Market Data

Trading Symbol	CSE:ETI
Share Price	\$0.40 CDN
12 Month High/Low	\$1.00 - \$0.40
Market Capitalization	\$20.4 M
Issued Shares	51 M
Options & Warrants	16.3 M
Cash Balance	\$3.00 M
Top Shareholders	Iberian Minerals: 4.0 % Management & Directors: 11.07 %

Overview

Gold, as one of the most valuable of the precious metals, is produced by both conventional mining methods and more recently, from end-of-life electronic waste, known today as 'urban-mining'. Both of these methods require a safe and effective alternative to their current extractive technologies.

Conventional gold mining operations rely heavily on cyanide leaching as the predominant method for recovering gold from ores and



concentrates. Cyanide has been the leach reagent of choice in gold mining because of its high gold recoveries, robustness and relatively low cost. As a result, over 76% of all gold extracted worldwide is produced by hydrometallurgical extraction with the use of cyanide. Gold extraction from electronic waste is typically based on either pyro metallurgical (smelters) methods or hot acid digestion methods.

Both industry sectors are being challenged by reduced grades, higher production costs, more complex ores and materials and increasingly more stringent environmental guidelines.

EnviroLeach Technologies has developed of a unique patent-pending, effective and environmentally safe alternative to cyanide and other toxic formulas used today. The EnviroLeach Process, has been found to be eco-friendly, stable, safe and actually provided faster leach kinetics and better recoveries than cyanide in many instances. Also, as a result of its reusable nature, it can be economical in comparison with both cyanide and acid digestion methods. Some of the operational benefits include:

- Fast leach kinetics
- Stable gold complex in solution
- Environmentally friendly & safe
- Broad applicability spectrum
- Operates at near neutral pH and at ambient temperatures
- No off-gas or detox systems required
- Dry Stacked tailings
- Simplified recovery of metals from solution
- accelerated permitting process
- access to mining areas that prohibit cyanide
- reagent is safe, reusable and offers a sustainable alternative to the toxic methods used today

The Technology

The EnviroLeach process is similar to a cyanide circuit but in-fact much safer and simpler. The oxidizing reagent is the result of selective inorganic electro-chemistry which results in the dissolution of the precious metals into aqueous solution followed by extraction of the resulting gold complex using conventional methods such as electrowinning, carbon absorption or precipitation. The operation is actually quite simple and does not require pressure, elevated temperatures, complex process circuits, intensive gas monitoring or costly detoxification systems.

The patent-pending reagent consists of a base formula of non-toxic dry ingredients which are mixed with water. The oxidant is uniquely generated and regenerated for re-use electrochemically. While the primary formula was found to leach gold, a number of leach enhancing agents have been identified that improve the gold leach kinetics as well as the stability of the gold that has leached into solution. These leach modifying additives are a unique and key component in the effectiveness of this process.

EnviroLeach has completed over 4,000 individual tests. Extensive Independent testing and analysis was performed by Met-Solve Laboratories Inc. in Langley, BC, and ALS Labs in North Vancouver, BC.

The EnviroLeach product performed better on both kinetics and total amount of precious metal recovered metrics. The metals are very stable in solution and there are no preliminary indications to a maximum solubility level.

Using the proprietary formula and process, EnviroLeach extracts precious metals from the host material into solution in a safe, environmentally friendly and sustainable fashion.

The Mining Sector

The hydrometallurgical extraction of gold from ores, concentrates, tailings in a cost effective and environmentally safe manner offers an interesting challenge. Conventional gold mining operations rely heavily on cyanide leaching as the predominant method for recovering gold from ores and concentrates. Cyanide has been the leach reagent of choice in gold mining because of its high gold recoveries, robustness and relatively low cost.

Mining is one of the world's most important economic sectors. Globally, the gold mining industry directly contributed around US\$ 80 bn to the global economy in 2013. If the indirect economic effect of the industry's expenditure on supplementary goods and services is included, this amount increases to US\$ 171.6 bn.



A recent study by SME indicates that over 76% of gold is produced using cyanide extraction. The gold mining sector uses approximately 66,000 tons of sodium cyanide worldwide. Both the use and disposal of cyanide present significant safety and environmental risks.

The E-Waste Sector

According to a report offered by US-based Market Research Store, the global e-waste management market was valued at US\$17.0bn in 2015. In terms of volume, it stood at 86.40 million tons in 2015. As reported, North America accounted for approximately 33.0 % of the total revenue generated in 2015.

The sector is expected to grow to US\$49.4bn by 2020, registering a CAGR of 23.5% during the forecast period 2015 - 2020. It is one of the fastest growing waste streams in emerging as well as developed regions. The reduced life spans of electrical, electronic and consumer

electronic devices are generating large quantities of E-Waste, which is growing rapidly every year. Other drivers in the E-Waste sector growth can be attributed to the following:

- Decreasing life span of electronic devices
- Rate of Obsolescence
- Increased adoption of technologies
- High cost of recycling
- Limited eco-friendly recovery processes

Electronic waste - including mobile phones, TVs and computers – is thought to contain as much as 7% of all the world's gold. E-waste recycling will play a significant role in the coming decade and impact industries globally, thereby boosting economy through e-waste management. Currently, only a small portion of old products is collected and directed into state-of-the art recycling chains. Significant improvements are needed here to fully utilise this secondary metal resource.



Gold accounts for more than half of the revenue from e-waste materials. The number of gold mines available is limited and they are often in particular geographic locations where there have been political tensions. Economic uncertainty can influence the availability of gold. The demand for gold in electronics continues to increase.

Summary

EnviroLeach is uniquely positioned within 2 very strong sectors with a safe and environmentally friendly product which provides a cost effective solution to the current toxic methods of extraction used today. Broad consumer demand for environmental responsibility and sustainability is driving necessity for change in both sectors.

There is currently no safe, cost-effective, environmentally-safe, production-scale recovery method available for the extraction of precious metals from E-Waste except for conventional smelting. The industry is searching for a viable alternative. EnviroLeach product is proven to be very effective at recovering metals from E-Waste. The company has completed initial pilot testing and is developing a 10 TPD pilot plant to demonstrate the scalability of its process.

The company has filed 2 patents to protect its intellectual property, has the first mover advantage and currently has little or no competition. The company continues to advance its technologies and is aggressively pursuing relationships in both sectors.