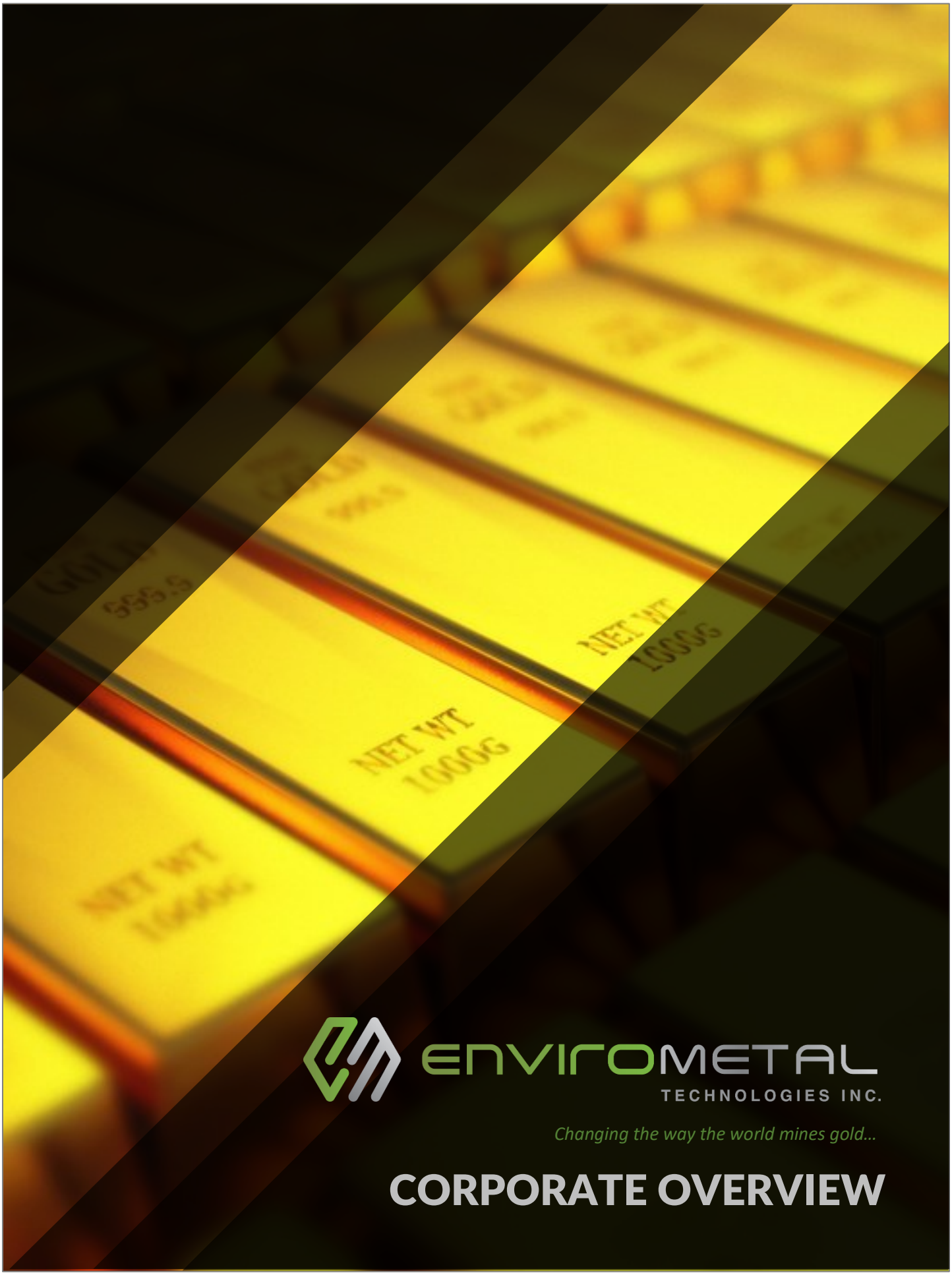


ENVIROMETAL
TECHNOLOGIES INC.

Changing the way the world mines gold...

CORPORATE OVERVIEW

Changing the way the world mines gold…

Executive Summary

EnviroMetal Technologies Inc. is a Canadian science and technology company commercializing clean, precious metal recovery technologies. EnviroMetal offers the only cost-effective and sustainable alternative for recovery from primary and secondary sources.

The Company has developed disruptive, environmentally friendly, and sustainable chemical formulas and processes for the hydrometallurgical extraction of precious metals from conventional gold ores, concentrates, and PCBAs from the E-Waste sector.

The Company's unique, patented technology delivers a cost-effective, Eco-friendly, and superior alternative to the current broad use of toxic cyanide and smelting by these sectors.

Its proprietary and safe formula is generated by combining FDA-approved ingredients with ambient temperature water and utilizing a patented electrochemical process to produce the powerful reagent. The unique process offers significant cost and environmental benefits over the incumbent processes

The company has invested over $30M during its formative 4-year research and development stage. This research involved thousands of lab and pilot-scale tests on gold ores, gold concentrates, and secondary sources of metals including spent automotive catalysts and end-of-life electronics-based printed circuit board assemblies (PCBAs).

The company has completed bulk-scale commercial testing on hundreds of gold ores, concentrates, PCBAs, and industry by-products which have successfully produced thousands of ounces of "green" gold to date.

There are two primary target markets for Company's commercial applications. EnviroMetal is actively establishing relationships within the $180B gold mining sector. The mining application is scalable for small to very large mining operations and is applicable across almost all existing sector processes including, agitated vat leaching, gravity, and flotation concentrates, oxidative pretreatment & leach process, artisanal mining applications.

The Company's metallurgists and scientists are also exploring the potential use of the EnviroMetal technology on heap-leach mining applications, and a revolutionary new in situ gold recovery process all of which are demonstrating favorable preliminary results.

EnviroMetal also applies its technology to the $45B E-Waste sector for the extraction of metals from Printed Circuit Board Assemblies, (PCBAs). The Company currently operates a 2,400 tonne per year PCBA processing facility in Vancouver, Canada which produces an almost pure gold product and a rich metal concentrate containing gold, silver, palladium, and copper. The Company is engaged with electronic industry participants and related processing industries to license its proprietary and scalable PCBA process technologies globally.

The benefits of the EnviroMetal process are as follows:

- Harmless ingredients
- No air emissions or water effluent
- Low water consumption
- Low environmental impact
- A simplified and faster-permitting process
- Access to environmentally sensitive areas
- Unlocks the value of smaller gold deposits
- Re-usable formula and process water
- Helps gold miners address ESG standards
- On-site gold recovery
- Low CAPEX & OPEX solution
- Scalable, modular plant designs
- Reduces remediation and reclamation costs
- Broad applicability Spectrum

The Company has limited competition and is an early mover in the offering of an effective and sustainable solution to

both the primary and secondary precious metal sectors. Its unique product offers an eco-friendly alternative with superior performance at a lower cost than the incumbent processes.

The Company holds two fully issued patents and one patent pending on its proprietary formulas and processes and maintains numerous strategic trade secrets and IP.

The Company maintains an 8,000 sq ft office and metallurgical laboratory in Burnaby, Canada, and a 25,000 sq ft. commercial-scale PCBA processing facility and pilot-scale gold concentrate plant in Surrey, Canada.

The Company is projecting annual revenues from its end-of-life Printed Circuit Board Assemblies (PCBAs) division of approx $10M per year from its current PCBA process facility at margins of approximately 10% to 20% with future revenue growth from additional company-owned facilities and royalties from the licensing of its technologies globally.

The Company is projecting revenues from the Gold Mining division based on a 2% licensing/royalty model and projects a market penetration of 0.65% of the gold mining sector over the next 5 to 7 years. If successful, this would generate an estimated $26M per year in high-margin royalty-based revenue. The Company boasts a proven and experienced Executive and Board of Directors with broad industry experience.

Technology Overview

EnviroMetal's unique formula involves a new scientific process called inorganic electrochemistry. The formula is created by combining only FDA-approved additives with ordinary water and then uses a patented new electrochemical process to produce a powerful reagent/lixiviant that rapidly dissolves metals into solution. The EnviroMetal formula functions at a neutral pH, and ambient temperature and pressure. The process is simple to use and provides similar or better gold recoveries with faster leach kinetics than cyanide, yet is completely benign, non-toxic, and reusable.

The patented process is unique from all of the current hydrometallurgical processes due to its unique reusable element-based inorganic electrochemistry.

The formula and process provide a powerful and stable oxidizing solution that rapidly dissolves gold into solution. The gold is then extracted using conventional methods such as ion exchange resins and electrowinning. After gold recovery, the barren solution is then regenerated for reuse by subjecting it to a proprietary diamond-based electrochemical cell technology.

This low-cost, sustainable closed-circuit process provides extended reusability of both the reagent and the process water resulting in no effluent or required tailings compound. In contrast, other reagents such as cyanide and aqua regia are based on chemical compounds which combine with the gold to create complexes that must be broken down to recover the gold from the solution and the resulting byproduct cannot be reused. This results in toxic liquid discharges that must be treated or subjected to cyanide destruct circuits before disposal. The following image illustrates a simplified process flow.

The entire EnviroMetal process is environmentally friendly, safe, simple, and is described as follows:

1. Combine the target solids with the solution in an agitated tank on a 10% to 40% pulp density (solids/liquid ratio).
2. Once the target metals are dissolved in solution (usually 1 to 24 hours), the solids and liquids are separated.
3. The remaining solids (tails) are rinsed with recycled fresh water to remove residual chemicals and trace amounts of gold.

4. The gold-rich "pregnant leach solution" (PLS) is subjected to recovery in specialized electrowinning cells to electroplate the gold from the solution.
5. The resulting electroplated gold is sent for refining.
6. The barren solution is then passed through a proprietary electrochemical cell to regenerate the solution for reuse.
7. The process water is treated, with gold and other trace metals removed, and recovered and the resulting clean rinse water is stored for reuse in the next cycle.

The EnviroMetal process can be either a batch style or a continuous process and is similar to conventional cyanide leach circuits but has no effluent, off-gassing, and drastically reduces the environmental risk for operators.

The company has invested over $30M during its formative 4-year research and development stages and has completed thousands of lab-scale tests on hundreds of different gold ores and concentrates. They have also performed many bulk-scale tests which have successfully produced thousands of ounces of "green" gold to date.

The Company's research teams are also exploring the potential use of the technology on conventional heap-leaching applications as well as a revolutionary new in situ gold recovery process with favorable preliminary results on both.

The potential to mine gold "in-place" by solution injection instead of open-pit or underground mining could significantly alter the economics of the entire sector and change the way the world mines gold.

Proprietary IP and Patents

The preliminary patent was filed in June 2016 as a provisional application and relates to the main components of the lixiviant solution and the methods of use.

A second patent was issued in 2019 that covers the technology related to the conductive diamond electrodes as used in the EnviroMetal process and the efficiency gains from the inclusion of a new chemical additive.

A third patent was filed in 2019 for the unique waste-water treatment process involved in the recycling and reuse of the process water. The application also concerns additional modifications to the chemistry that improve the performance of the process.

Target Markets

Gold Mining Sector

- 2021 EST – 105.9*M Gold Ozs per Year $190B Market
- Gold recovery from both ores and concentrates
- Cost-effective alternative to cyanide & smelting
- High-efficiency recoveries and fast leach kinetics
- Simplifies mine permitting and approval processes
- On-site, low-cost modular solution
- Potential for heap leach and in-situ gold recoveries

The gold mining sector is a vast global business. Gold production reached over 110M Oz in 2020, down slightly from 2019 due to operational constraints related to COVID-19. S&P Market Intelligence estimates 2021 production to increase to 105.9M Oz, up 6% from 2020, as the sector recovers from the Pandemic. Additionally, ***Research and Markets*** project the sector to grow at a 3% CAGR, reaching $249.6 billion by 2026.

The gold mining industry has historically used toxic mercury, cyanide, and acid-based leaching and smelting to recover gold from ores and mineral concentrates. These methods, though effective, have negative environmental impacts and increasingly, permitting issues. Currently, the majority of primary gold production comes from sources employing cyanide leaching or concentration followed by smelting.

Gold Mining Sector Opportunities, Challenges & Trends

Opportunities

- 105.9M Ozs of gold produced annually valued at $190B
- Initial target market 23M Oz per year gold concentrate
- Potential for heap leaching and in-situ gold recovery

Industry Challenges

- Current processes have environmental risk and impact

- Cyanide is widely opposed globally
- Permit processes are costly & extensive
- Smelting involves off-site transport of concentrates and produces high CO2e emissions
- Meeting the zero-waste challenge
- Reduce mine-related traffic through communities

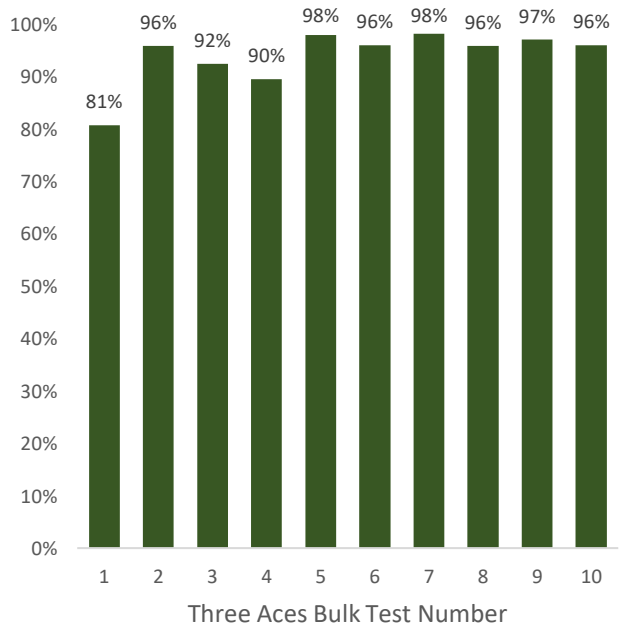
Recent Trends

- Widespread adoption of ESG risk assessment and rigorous reporting
- Industry seeking to adopt UN SDGs, improving environmental stewardship
- Chinese smelters and ports adding additional charges
- Potential in-situ recovery of gold may change the way the world mines gold.

EnviroMetal delivers a proven cost-effective and superior alternative to incumbent processes.

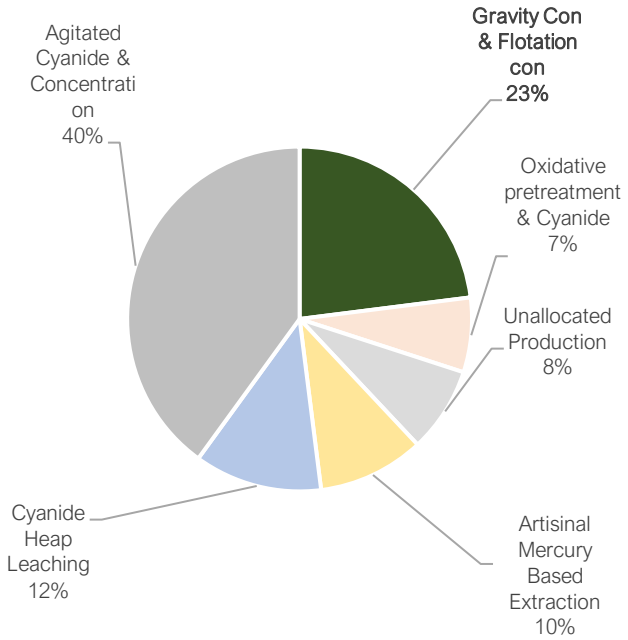
Proven Performance – Beyond Lab Scale

The company has performed numerous bulk tests of the formula and process and has poured over 1,000 Oz's of gold. A comprehensive test performed at the Three Aces Gold MineProject in Yukon, Canada (Seabridge Gold), which included 10 separate bulk tests on high-grade gravity concentrates, demonstrated average gold recoveries of over 94% without any chemical formula optimization.



Gold Mining Production by Process

The gold mining industry has traditionally used hydrometallurgical leaching or smelting to recover gold from ores and mineral concentrates. Currently, the majority of primary gold production comes from sources employing cyanide leaching or ore concentration followed by smelting.



The following table outlines the approximate annual gold ounces extracted by each broad process.

Process Type	Annual Ozs
Agitated Cyanide & Concentration	40,000,000
Gravity Con & Flotation Con	**23,000,000**
Cyanide Heap Leaching	12,000,000
Artisanal Based Extraction	10,000,000
Unallocated Production	8,000,000
Oxidative pretreatment & Cyanide	7,000,000

Marketing Focus

Managements' initial focus is to address the gold flotation and gravity concentrate segment of the market which currently produces some 23M ounces of gold per year valued at over $41.4B.

The benefits to these gold miners within this segment are very evident and include; lower costs, on-site gold dore' production, faster and higher payable metals, reduced shipping or handling costs, and no third-party processing penalties for arsenic or mercury contaminants.

The Company is projecting an approximate 3% market penetration of this segment over 5 to 7 years (approx. *650,000 Ozs/yr*) valued at $1.32B by 2028. This represents a modest 0.65% penetration of the total gold mining sector.

Based on a nominal 2% royalty model, would result in est. annual royalty streams of over $26M.

5 Year Market Penetration Estimate

Primary target market – Oz's per year	23.5M Oz's
Primary target market value	**$39.90B**
5 year Est. Market penetration - %	3%
Est. Annual gold production – Oz's	0.77M Oz's
Estimated annual value	$1.32B
Est. Annual royalty rate - %	2%
Est. Annual royalty	**$26.4M**

The capital requirements for the necessary "add-on" EnviroMetal related plant components are relatively inexpensive and simple to install and operate. Depending on the level of penalty yielding contaminants within the concentrates, miners can expect up to a 50% improvement in net payables over smelting.

Gold Mining and ESG

As the global economy began recovering from the pandemic in the second half of 2020, the metals and mining sector benefited from rebounding prices. Demand for most metals was driven upward by the release of pent-up consumer spending, new government stimulus efforts, and an accelerating global energy transition. Having emerged significantly leaner following the 2013-2016 downturn, the industry has roused itself to tackle new opportunities while looking to avoid a repetition of past excesses.

*" A nominal 3% conversion from smelters to Enviro**Metal** would potentially reduce CO2e emissions by over 1,370,000 tonnes per year,"*

EnviroMetal CEO Duane Nelson

With a new comprehensive framework developed by the World Gold Council, the gold mining industry is seeking to align, report and provide assurance against numerous principles to earn/maintain its license to operate through Responsible Gold Mining Principles. Many of the large-tier gold producers have adopted these principles. This presents a significant opportunity for EnviroMetal to assist miners in meeting the objectives and goals of the World Gold Council's mandate. The adoption of these objectives enables companies to enhance their long-term company value and retain r stakeholder support.

it is clear that investors are demanding mining companies adopt a holistic view towards ESG. Decisions and actions at all levels of a company need to maintain and align with company principles that ultimately inform investors' decisions.

Gold miners that adopt technologies such as EnviroMetal's innovative sustainable recovery solution can make gold mining operations safer, more environmentally friendly, and still positively impact the financial bottom line.

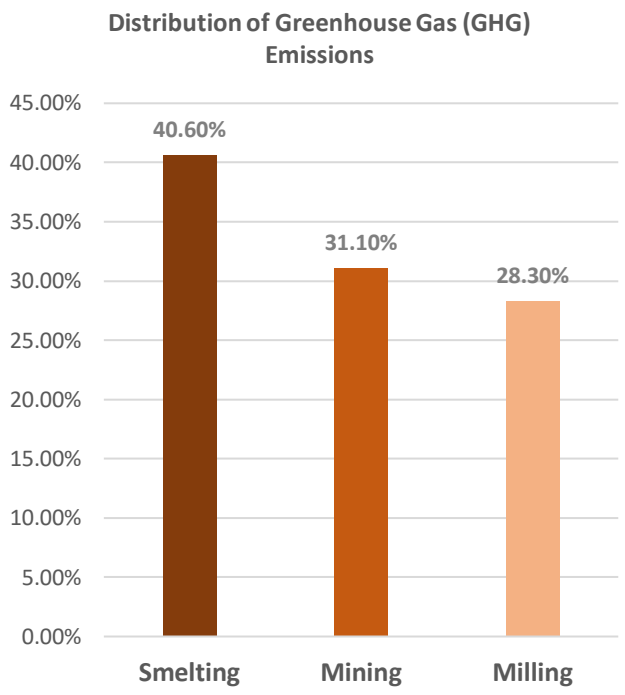
EnviroMetal's solution allows miners to focus on the environment, safety, and governance to maintain an acceptable social contract with their respective communities and the industry. The following key operational advantages help achieve this:

- All ingredients in the formula are FDA approved and safe to use, handle, and transport
- No wastewater or air emissions. Significant CO2e reduction compared to conventional smelting
- Proprietary reuse of chemistry and water recovery process delivers a long-term sustainable solution
- No toxic emissions are produced in the process. Reduced monitoring and remediation
- The use of environmentally friendly mining practices helps to build strong relationships with local communities and stakeholders.

Companies are under continued mounting pressure from shareholders to expedite the shift toward cleaner metal production. The risk of companies disposing of high-impact assets, as opposed to investing in reducing emissions, is that it is simply displacing the problem rather than resolving the issue. The perception of the industry could be tarnished by the continued existence of these 'dirtier' assets.

Wood McKenzie estimates the sector emitted 55Mt of CO2e in 2019 or approximately 0.2% of total global carbon emissions. They have not yet published estimates for 2020 or 2021. The smelting stage of gold production accounts for a 40.1 percent share of the total greenhouse gas emissions produced throughout the gold mining process or approximately 22 million tonnes.

Greenhouse Gas Emissions by Process Stages



The use of Cyanide in Mining

Cyanide is the most commonly used hydrometallurgical leaching agent in the gold mining industry. Cyanide provides simple, fast leach kinetics, generally high gold recoveries, and relatively low costs when compared to other leaching options. It is predominantly used in agitated vat leach and heap-leach mining applications.

Its discovery in the late 1870s led to a revolution in the gold mining sector due to its ability to extract gold efficiently from lower-grade ores. Its inexpensive extraction capabilities altered the commercial metrics of the entire sector and unlocked the value of thousands of gold deposits globally.

Cyanide compounds are widely used by the mining industry to assist in the extraction of precious metals from ore. In agitated vat leach or heap leaching. In heap leaching, a dilute cyanide solution is sprayed on crushed ore that is placed in piles, commonly called heaps or mixed with ore in enclosed vats. The cyanide binds to minute particles of gold to form a water-soluble, gold-cyanide compound from which the gold can later be recovered.

Most of the cyanide used by the regulated mining industry is handled without obvious negative impact, the unique chemical behavior and toxic nature of these compounds, combined with the risk of serious mine waste spills, the unregulated use of cyanide, negative public perception, and permitting issues all contribute to the mounting pressure on the mining industry to adopt non-cyanide based metal recovery processes such as EnviroMetal's when feasible.

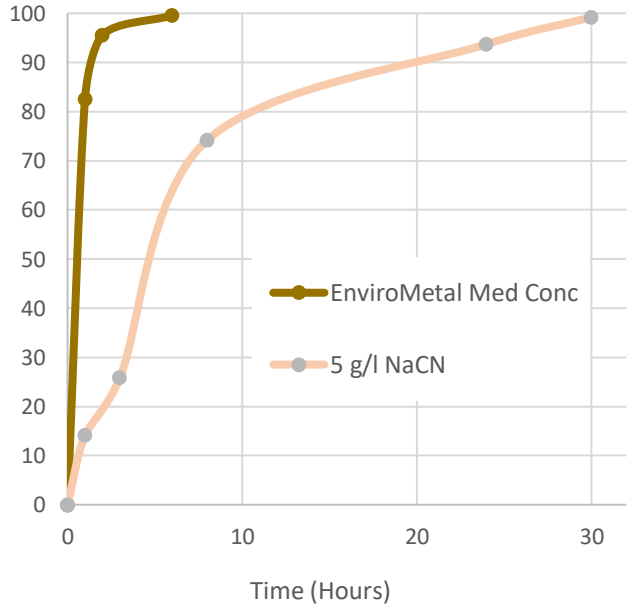
The comparative matrix of the properties of the EnviroMetal formula vs Cyanide is outlined in the following table:

Comparative leach Kinetics and Recoveries

Attributes	Cyanide	EnviroMetal
• High gold recoveries	Yes	Yes
• Fast leach kinetics	Yes	Yes
• Environmentally sustainable & safe e	No	Yes
• Safe to handle & transport	No	Yes
• Broad applicability spectrum	No	Yes
• No dangerous off-gassing	No	Yes
• No dangerous waste-water effluent	No	Yes
• Functions in the presence of copper	No	Yes
• Potential for In-Situ gold recovery	No	Yes

Independent tests performed by SGS confirmed faster leach kinetics by EnviroMetal over cyanide on the same gold ore. The EnviroMetal formula out-performed the cyanide-based sample delivery comparable gold recoveries of 96.5% in only 5 hours versus 32 hours for the cyanide sample.

EnviroMetal vs Cyanide Gold Recoveries



The Use of Smelting in Gold Mining

Approximately 23% of all gold production comes from the concentration of gold ores into gravity and flotation

concentrates. A portion of these concentrates are processed by cyanide but the majority are sent to international smelters for precious metal extraction.

The World Gold Council estimates the gold mining sector emitted 32,689 tonnes of CO2e per tonne of gold produced in 2018, up 12% from the 2017 total. They have not yet published estimates for 2019. The smelting stage of gold production accounts for a 40.1 percent share of the total greenhouse gas emissions produced throughout the gold mining process.

The projected 3% conversion to EnviroMetal for the processing of these concentrates will have a dramatic effect on the CO2e emissions, reducing these emissions by over 1,370,000 tonnes per year. There are numerous benefits for a gold miner to adopt the EnviroLeach process rather than shipping concentrate to smelters. These include:

- Lower process costs – higher profits
- On-Site gold production –immediate payment
- Less material handling
- No overland transport or shipping fees
- No smelter penalties
- Low Carbon (CO2e) footprint
- Environmentally friendly process
- Lower assay variance/bias
- Reduced foreign taxes
- Potential government rebates & Carbon Credits

The economic benefits of converting to EnviroMetal are due mostly to the reduction in transportation, handling, and treatment costs, but significant savings can be added if the concentrate material contains any smelter-designated contaminants such as mercury, arsenic, sulfur, base metals, antimony, tin, bismuth, and more. The following chart illustrates examples of process cost differences between conventional smelting versus the use of the EnviroMetal process.

The chart displays the results of 5 different examples with varying grades and contaminants. As detailed below.

Example	Gold (gpt)	Silver (gpt)	Arsenic (%)
Example 1 - 50K Tonnes /Yr	110	239	0.60%
Example 2 - 10K Tonnes/Yr	65	196	1%
Example 3 - 22K Tonnes/Yr	45	100	3%
Example 4 - 1.5K Tonnes/Yr	300	221	0%
Example 5 - 500 Tonnes/yr	1000	320	10%

Other Hydrometallurgical Chemicals

Although other alternatives such as chlorine, thiosulfate, thiourea, and others have been extensively researched and tried, none have proven to be a viable economic alternative to cyanide. In-Fact, there have been no significant advances in hydrometallurgy since the introduction of cyanide in the 1870s.

The gold mining industry is increasingly coming under pressure to develop and adopt new technologies for processing ores, but EnviroMetal is the only commercially-viable alternative. The table below summarizes some of the alternate chemistry considered, and attempted, but never adopted, for the potential replacement of cyanide:

Potential Hydrometallurgical Alternatives

	EnviroMetal	Cyanide	Thiosulfate	Chlorine
Applicability	Broad	Broad	Limited	Limited
pH Sensitivity	Low	High	High	High
Temp Sensitive	Low	Low	Med	High
Kinetics	Fast	Fast	Fast	Fast
Toxicity	Low	High	Low	High
Hi-Low pH	No	Yes	No	Yes
H20 Hazard	1	3	1	2
Consumption	Low	Low	High	Med
Reusability	High	Med	Med	Med
Detox Costs	Low	High	Med	Med
Offgas Control	No	Yes	Yes	Yes
Capital Costs	Low	Med	Med	High

Potential Use in Heap-Leaching

Heap leaching is an industrial mining process used to extract precious metals, copper, uranium, and other compounds from ore using a series of chemical reactions that absorb specific minerals and re-separate them after their division from other earth materials.

Similar to in situ mining, heap leach mining differs in that it places ore on a liner, then adds the chemicals via drip systems to the ore, whereas in situ mining lacks these liners and pulls pregnant solution up to obtain the minerals.

Heap leaching is widely used in modern large-scale mining operations as it produces the desired concentrates at a lower cost compared to conventional processing methods such as flotation, agitation, and vat leaching.

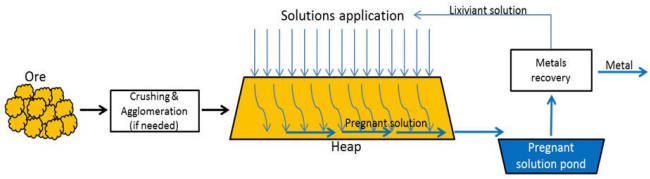
The mined ore is usually crushed into small chunks and heaped on an impermeable plastic or clay-lined leach pad where it can be irrigated with a leach solution to dissolve the valuable metals.

While sprinklers are occasionally used for irrigation, more often operations use drip irrigation to minimize evaporation, provide a more uniform distribution of the leach solution and avoid damaging the exposed mineral.

The solution then percolates through the heap and leaches both the target and other minerals. This process called the 'leach cycle', generally takes from one or three months for simple oxide ores (eg most gold ores) to two years for nickel laterite ores.

The leach solution containing the dissolved minerals is then collected, treated in a process plant to recover the target mineral and in some cases precipitate other minerals, and recycled to the heap after reagent levels are adjusted.

Ultimate recovery of the target mineral can range from 30% of contained run-of-mine dump leaching sulfide copper ores to over 90% for the ores that are easiest to leach, some oxide gold ores.



The significant advantage of the heap leaching method over conventional leaching and recovery techniques is that heap leaching consumes less than 0.3 tons of water for one ton of ore.

The Company has started research on the potential application of its unique formula in low-grade bulk heap-leach mining. This segment of the market represents approximately 15% of annual global gold production. The process is currently dominated by the use of cyanide to dissolve the gold from ores placed on large heaps above a liner.

Mining companies are proactively seeking advanced technologies that could allow them to reduce costs and increase performance. They are also looking for ways to gain access to resources that at present are considered abandoned or uneconomic.

Generally, the HL process involves the following steps:

1. Mine the ore
2. Crush the ore (if necessary)
3. Agglomerate the ore (if necessary)
4. Place the ore on a lined pad
5. Irrigate the ore with the appropriate lixiviant to dissolve the metals (leachate)

6. Collect the leachate in a pond or tank (pregnant or value bearing solution)
7. Process the pregnant solution to recover the metals
8. Recycle the barren solution (with additional lixiviant) back to the heap.

Potential Use in In-Situ Gold Recovery

The Company has partnered with Group 11 technologies to explore the potential for in-situ gold recovery ("ISR") or in-place mineral extraction ("IMPE")

IMPE processes combined with the Envirometal solution, which uses FDA-approved elements that are essential elements to humans, presents a disruptive, environmentally friendly alternative to conventional mining.

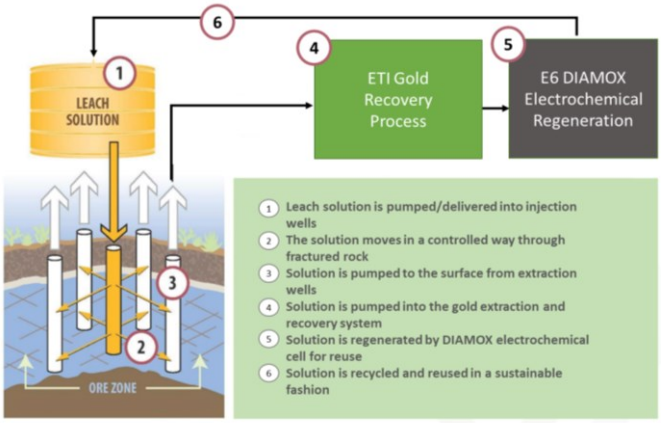
In-Place Mineral Extraction and In-Situ Gold Recovery

The concept of IPME is a clearly preferable concept to conventional open-pit or underground mining in that little surface disturbance occurs, the need for conventional large scale plants and equipment is reduced or eliminated, the permitting cycle for a mining project will be shortened and the ultimate reclamation and restoration of the land and water will be quicker and more efficient. In-Situ Gold Recovery is the most advanced and effective means of IPME

ISR is an environmentally friendly process by which gold can be extracted from the ground with minimal disturbance to the surface environment. ISR mining has a long history, starting with uranium mining in the 1960s. The United States has a positive track record for ISR permitting. For example, the San Manuel copper mine located in Arizona was a successful BHP Billiton operation that integrated ISR methods with open pit and underground mining and produced approximately 3.25 billion pounds of copper in 14 years of production.

In-situ recovery (ISR) is a non-invasive mining method whereby boreholes or "delivery wells" are drilled into an orebody, through which a dilute solution is pumped to dissolve the target minerals or metals. The solution moves through the rock in a controlled manner to nearby recovery wells, where it is pumped back to the surface for processing. Differential pumping rates or natural impermeable barriers are used to control the movement of the solution through the rock. This, combined with well field design, prevents any solution from exiting the mine area. The pumping action of the recovery wells ensures all of the gold-rich or "pregnant solution" is collected from the delivery well.

In ISR mining of copper oxide ores, the dissolving solution is usually sulfuric acid. The ISR mining of gold uses Envirometal's proprietary and eco-friendly lixiviant or solution to dissolve the gold. In effect, the boreholes or wells become the "mine access" and the leach pad is "left underground". Recovery of gold from solution is done by Ion Exchange Resins and electrowinning and the subsequent regeneration of the lixiviant is accomplished using proprietary diamond-based electrochemical cells.



Advantages to In-Situ Recovery Mining:

- Significantly lower capital and operating costs
- Reduced mine development time
- Unlocks the value of smaller deposits
- No waste or ore moved
- No creation of open holes, waste dumps, leach pads, or tailings
- Minimal visual disturbance
- Minimal noise, dust, and greenhouse gas impact
- Fewer permits are required compared to other mining processes
- Reduced mine remediation time and costs

All successful gold ISR projects to date have been in other parts of the world, all have used cyanide, with the first successful test of gold ISR at the Gagarskoye Gold Mine. An early and apparent first test of non-cyanide gold ISR was conducted at the Ajax mine in Cripple Creek, Colorado by the Golden Cycle company in the 1970s. Until now, there has been no leach solution or lixiviant that could consistently dissolve gold in place in a safe and environmentally friendly manner. The use of cyanide or other toxic chemicals was obviously considered too dangerous for the environment. The recent introduction of Envirometal's proprietary eco-friendly and safe process has only now opened the door to the advanced research of the in-situ recovery of gold from underground deposits.

The Envirometal's unique, environmentally safe solution, is water-based and only includes ingredients approved by the FDA for human consumption, The Envirometal solution is fast and offers comparable leach kinetics to that of high-intensity cyanide, assuring high recovery rates.

By utilizing Envirometal's proprietary environmentally superior solvent in combination with Group 11's deep expertise in ISR, EnviroMetal believes that it has the potential to reshape the traditional gold mining industry through In Place Mineral Extraction.

Gold Mining Sector Summary

- The company's process solution results in reduced environmental impact and CO2e emissions. It reduces shipments of mine concentrates to smelters. The associated reductions in transportation costs, penalties, smelter processing fees enhance mine project economics and allow mine operators to control the complete mine operating cycle including on-site gold production. Due to the remote location of many mines, savings in transportation costs can have a significant positive business impact.

- The company's technology will allow operators to unlock the potential value of many deposits located in environmentally sensitive areas that cannot be otherwise developed using current extraction methods.

- EnviroMetal has little or no competition in the mining sector for eco-friendly solutions that offer economic alternatives to cyanide or smelting. Because of technical advantages and early mover status in this market, management is confident it can position itself as a dominant player. The company's commercial strategy for the mining sector is based on a combination of licensing and royalty models.

- According to the World Economic Forum, in 2015, the mining and extraction of raw materials accounted for 7% of the world's energy consumption. By 2040, the production and use of electronic devices will reach 14% of global carbon emissions.

- The adoption of the EnviroMetal technology by the mining sector will help reduce the environmental footprint and associated risks of mining, particularly gold mining, by providing a cost-effective alternative to the widespread use of smelting, cyanide, and mercury.

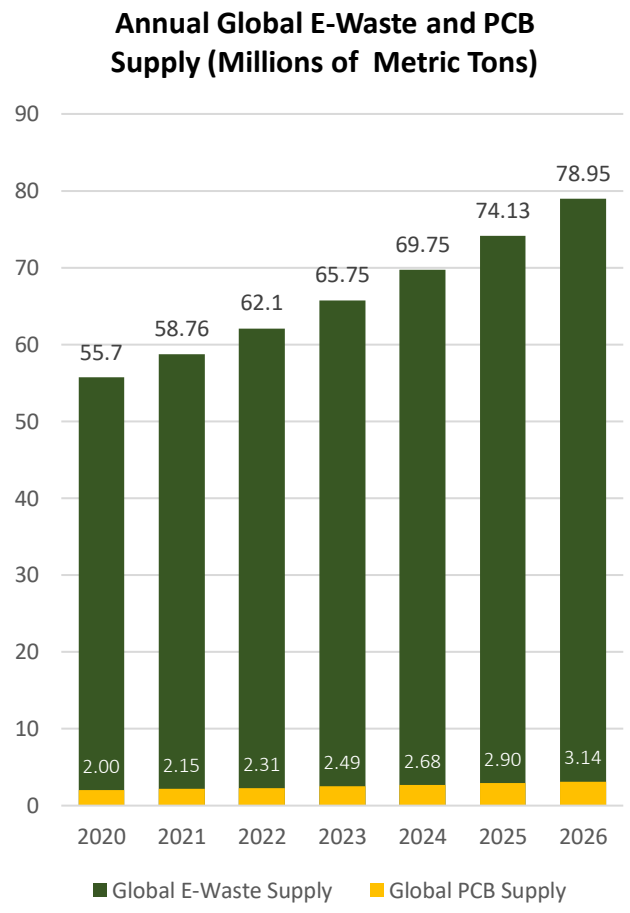
- EnviroMetal offers potential broader applicability within the sector with current research and testing on heap-leaching and a revolutionary disruptive in-situ gold recovery process.

E-Waste Sector Opportunity

- $65B E-Waste Market
- $10B end of life Printed Circuit Board Market

- PCBA supply to reach 3.1M tonnes by 2026
- Sustainable metal recovery from PCBA's
- Cost-effective, and sustainable alternative to smelting
- Significant reduction of CO2e emissions

E-Waste is the fastest growing waste stream in the world and is defined as any appliance or device with a battery, electric cord, or plug. Global E-Waste is produced primarily from developed regions of North America, Europe, and the UK, Japan, Korea, and China.



According to Transparency Market Research, the global production of E-Waste generated annually is expected to increase to over 78 million metric tons annually by 2026, and potentially to 120 million metric tons by 2050. A growing component of the E-Waste stream is electronics. Half of all E-Waste generated is personal electronic devices. It is estimated that in 2020 between 25 and 50 billion internet-linked devices were produced. Furthermore, E-Waste represents 70% of hazardous waste that is directed to landfills.

Only approximately 20% of global E-Waste is currently recycled. The disassembly and extraction of precious and base metals from the contained printed circuit boards is predominantly the value driver in E-Waste with PCB representing over 90% of the value. According to Transparency Market Research, global production of this PCB material is expected to grow from 2.0 million metric tons per year to over 3.14 million metric tons by 2026 and continue to grow at a compounded annual growth rate (CAGR) of 7.3%. In North America alone, this number is expected to grow from 397,000 metric tons to 642,000 metric tons by 2026.
The global E-Waste sector is highly fragmented with the sector primarily relying on the use of conventional smelting to *process the printed circuit boards for the recovery of the contained valuable metals. Smelting of the PCBs is expensive,* inefficient, and unreliable due to the majority of the material being non-metallic. The composition of this substrate material is carbon-based and as a result, the burning of this material produces excessive air emissions.

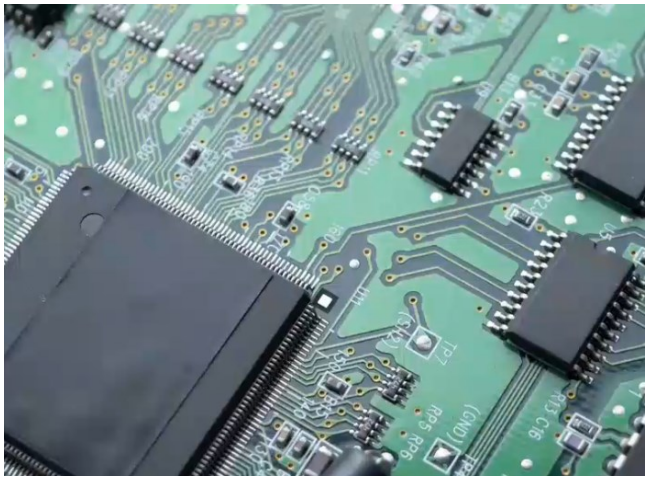
The COVID-19 Pandemic has a measurable impact on the E-Waste sector. The closure of corporate offices, education institutions, and government infrastructure across the developed world effectively suspended the collection of E-Waste. Collection programs were subsequently suspended and recycling facilities were forced to close or operate at limited capacity due to lack of supply. The sector was also affected by drastically increased shipping costs and shipping delays. During this time, however, E-Waste supply continued to build and as the recovery continues during the second half of 2021, the E-Waste industry has resumed with most facilities coming back online and shipments flowing at increasing rates.

E-Waste is a significant global waste problem that represents an equally significant opportunity for innovative processing solutions. These solutions will help close the loop in the circular economy and benefit stakeholders across the supply chain. These goals and opportunities are aligned with the corporate vision of EnviroMetal Technologies Inc.

Over the last four years, EnviroMetal has worked with original equipment manufacturers (OEM) and electronics manufacturers to develop cost-effective and sustainable

metal extraction methods for E-Waste, particularly printed circuit boards. Printed circuit boards host high values of metals including gold, silver, copper, tin, and platinum group metals (PGM's). It is estimated that printed circuit boards contain between 35 and 100 times the amount of gold per ton contained in gold-bearing ores.

EnviroMetal has built and currently operates a 2,400 tonne per year Printed Circuit Board (PCBAs) processing facility in Vancouver, BC, Canada for the extraction of the contained gold, silver, palladium, and copper. Advanced research is underway on the hydrometallurgical extraction of the copper and tin contained in the PCBAs, which would be exclusive to EnviroMetal globally. The company is in discussions with international electronic OEMs, suppliers, and other related industries.



EnviroMetal enjoys the advantage of being an early mover with the provision of environmentally sustainable processes and has little or no competition in The E-Waste sector.

Resource scarcity, extraction, and emissions

There are concerns about the availability and supply of new materials for electronics and electrical devices in the future. Rising commodity prices have highlighted risks. Yet E-Waste contains many high-value and scarce materials, such as gold, platinum, silver, copper, and tin. There are many opportunities for better recovery. It is uncommon to throw away gold, silver, or platinum jewelry, but that is not true of electronic and electrical goods containing the same precious metals; up to 7% of the world's gold may currently be contained in e-waste.

Recycled metals are also two to 10 times more energy-efficient than metals smelted from virgin ore. Furthermore, mining discarded electronics produces 80% fewer emissions of carbon dioxide per unit of gold compared with mining it from the ground.

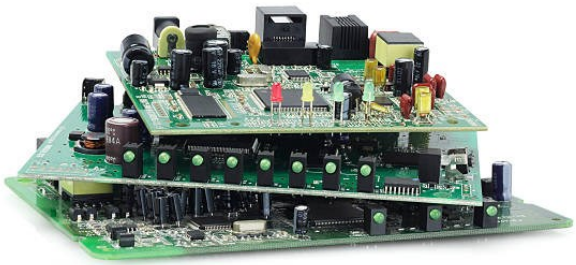
E-Waste Circular Economy

In 2015, the extraction of raw materials accounted for 7% of the world's energy consumption. This means that moving towards the use of more secondary raw materials in electronic goods could help considerably in reaching the targets set out in the Paris Agreement on climate change.

PCBAs present in all types of electronics equipment is of major interest because they are considered secondary raw materials that are rich in copper and precious metals such as gold, silver, and palladium. For example, a single mobile phone can contain high concentrations of gold (24 mg), silver (250 mg), and palladium (9 mg) [51]. When compared to the average contents of the primary sources (mined metals), these values reveal a secondary source of high metal concentration. The recovery of metals from this secondary source and the reintroduction of them into the manufacturing cycle reduces environmental impacts and costs related to their primary extraction.

Concentration of metals in the PCBs from mobile phones varies as below:

- Gold: 0.008% to 0.1%
- Palladium 0.003% to 0.007%
- Silver: 0.1% to 0.33%
- Copper: 16% to 34%
- Nickel: 0.1% to 2.6%
- Tin: 0.5% to 6%



One can see that the values are not entirely similar, due to the reasons mentioned above.

EnviroMetal is strategically positioned to become a transformative participant in the new circular economy. A circular economy is a system in which all materials and components are always kept at their highest value, and waste is designed out of the system. In many ways, a circular economy is different from today's linear economy. A circular economy can be achieved through new and different

business models including treating a product as a service, sharing of assets, product life extension, and finally recycling.

A circular economy for electronics would maximize the amount of valuable E-Waste that moves basic into the production of new electronic products and components. To achieve this, more countries, specifically those in the developing world, will need to adopt E-Waste legislation, such as extended producer responsibility, and build a formal recycling industry creating. These changes will create huge economic growth opportunities.

Hydrometallurgy and PCBAs

The initial steps in the hydrometallurgical processing of PCBAs consist of mechanical separation and then the dissolution of target metals into solution dissolve the solid material. In the following steps, the solutions are subjected to separation processes such as extraction, precipitation, ion exchange, filtration, and electrowinning to isolate and extract the metals of interest.

The main advantages of hydrometallurgical processing of electronic waste, when compared to pyrometallurgical methods, are:

- Reduced risk of air pollution
- Higher selectivity to metals
- Lower process costs (e.g. low power consumption and reuse of chemical reagents).

E-Waste represents a significant global opportunity. Fifty million metric tons of E-Waste have been generated annually and it is estimated that between 75 and 80 percent of E-Waste is not recycled. Governments, industry, and investor sentiment proactively support the increased recycling of E-Waste and its reintroduction into the value chain. The importance of electronic scrap is also on the rise in response to changes in consumer patterns and advancements in the technology of electronic devices which has resulted in the generation of enormous quantities of E-Waste that need to be managed and processed.

The North American market is ready for innovation. Regulations to inhibit E-Waste exportation also prompt domestic solutions. Currently, there are limited technology offerings to deal with E-Waste in general and specifically high-value components such as printed circuit boards. North America is projected to produce over 600,000 tonnes per year of scrap PCBAs. The only current process to treat scrap printed circuit boards is smelting. Further prompting demand for sustainable and innovative solutions, smelting facilities are operating at or close to capacity in multiple markets. Smelters ultimately control sales prices of E-Waste and capture a significant percentage of the contained material value.

The smelting process has certain disadvantages, it is energy-intensive and the payout rates for base metals and precious metals to recyclers are low. The loss of, and the subsequent non-payment, for tin and other metals, is significant and represents $300 to $900 per metric ton of printed circuit boards. The loss of gold and palladium from the smelting and mechanical processes is approximately 15% to 35%.

The EnviroMetal process provides industry participants an effective and safe alternative to cyanide and acid-based solutions. EnviroMetal's technology is strongly differentiated in the industry as it is the only sustainable and environmentally friendly alternative for the processing of mineral concentrates and E-Waste. The pending patents and process-related trade secrets create significant barriers for competitors to overcome.

Following four years of research and development, and one year of plant construction and commissioning EnviroMetal is starting to generate revenue in the E-Waste division. The Company is currently pursuing three concurrent strategies to commercialize and profit from its technology.

First, the company is ramping up operations of its corporately controlled facility in Vancouver, Canada. EnviroMetal considers the facility to be a commercial-scale pilot plant. Processing operations are expected to increase over the coming two calendar quarters to achieve throughput rates at an annualized capacity of 2,400 tons per year by Q2, 2022. Thereafter, EnviroMetal's model is based on an incremental market penetration through the addition of corporately owned 6,000 TPA plants across North America and the global licensing of its technology.

Between 2022 and 2026 EnviroMetal plans to build several additional plants each with an annual capacity of 6,000 metric tons. These plants will be located close to large markets to minimize logistics costs. Each additional plant represents a compounded market penetration rate of 1.5% of the North American PCB market per year over a five-year timeline, with a total market penetration of 10% over the period.

North America Market – Projected Hub and Spoke Model

Each plant will process feedstock from three levels of suppliers:

Level 1 Suppliers – Primarily large aggregators who currently sell directly to smelters. Feedstock from level one suppliers is readily available, but also the lowest margin source of E-Waste.

Level 2 Suppliers – Primarily E-Waste wholesalers typified by medium recyclers, small aggregators, and original equipment manufacturers (OEM). This group has access to larger quantities of materials but no direct relationships with smelters and typically sells to third parties. By sourcing feedstock directly from level two suppliers EnviroMetal plans to increase margins.

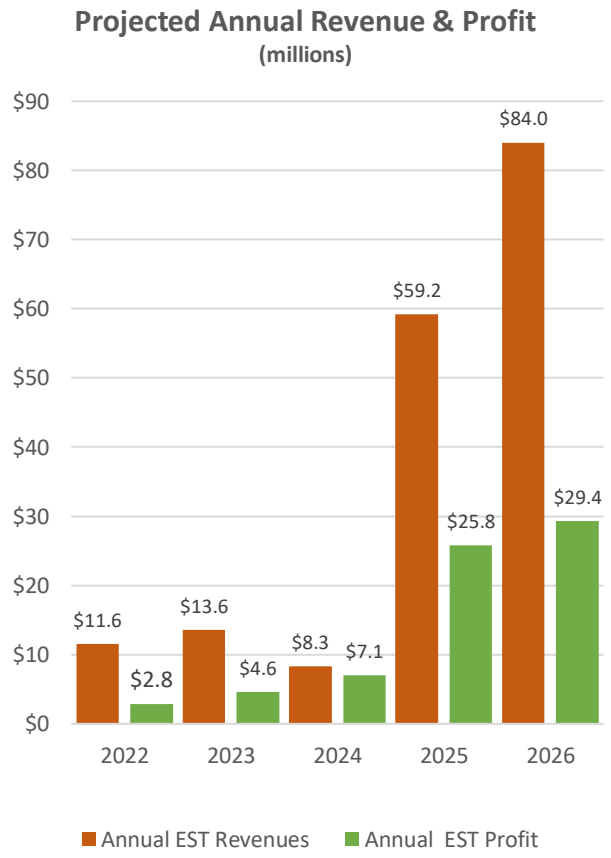
Level 3 Suppliers – Typified by small recyclers, educators, associations, and retail chains, this is a diverse group is motivated by a simplified and often environmentally friendly solution for their E-Waste disposal. By providing a simplified solution to these suppliers EnviroMetal expects to capture a significant portion of this high margin feedstock supply.

Second, EnviroMetal is developing an E-Waste Royalty revenue stream where established large-scale E-Waste processors will have the opportunity to license and use EnviroMetal's technology using a royalty model. The royalty model is expected to be attractive to large-scale recyclers (Level 2 Suppliers), which currently collect and process E-Waste, then ship partially processed (shredded) PCBA directly to a smelter. These recyclers seek opportunities to enhance their operating margins by the incorporation of value-added processes, such as EnviroMetal's. EnviroMetal's technology solution can be bolted onto existing E-Waste processing facilities at a relatively low cost.

Financial Plan and Forecasts

While the Company is not prepared to provide detailed financial guidance on its business plan or future operations, Management has prepared a summary of potential revenues and profit margins from both of its divisions. The following are estimates only with no assurances of success.

The following financial estimates assume that the Company achieves the targeted royalty-based revenue on 0.65% market share in the gold mining sector over 5 years. (3*% of the estimated 2021 - 23M Oz/yr gold concentrate segment*) It also assumes that the company will operate its current PCBA processing facility at 2,400 tonnes per annum and build one additional PCBA processing facility with an annual capacity of 6,000 tonnes per annum in the 4th quarter of 2024.



Executive Team and Board of Directors

Mr. Mel Lavitt, Vice Chairman, Director

Mr. Lavitt has over 50 years of investment banking expertise in emerging growth high tech and middle-market companies. His professional career included hundreds of capital market transactions accounting for several billion dollars of equity and debt financing. Mr. Lavitt also served as a Director of Jabil from September 1991 to January 2016, is on the advisory board of two private companies, TELUS International and Deserve, Inc., and on the board of directors of Storage Engine.

Mr. Duane Nelson, CEO & President, Director

Mr. Nelson has more than 40 years of experience in founding, financing, and advising emerging private and public companies and is the founder and CEO of EnviroMetal. He has founded several successful ventures. Most recently he was the CEO and co-founder of Silvermex Resources Inc., a past TSX listed gold and silver producer which was sold for $235 Million in 2013. He is the founder of Quotemedia Inc., a successful financial market data company established in 1998, a leading provider of global financial stock market data for the Toronto Stock Exchange, NASDAQ OTC, and others. Mr. Nelson is a member of the Board of Directors of Group 11 Technologies and on the Board of **NGO Sustainability in Consultive Status with the United Nations Economic and Social Council.**

Nathalie Pilon, CFO

Ms. Pilon has extensive experience in corporate and international operational finance, with an emphasis on corporate governance. She has held senior positions with publicly traded corporations, has led finance teams through exploration, development, construction, commissioning, and operations. Before joining EnviroMetal Ms. Pilon was held senior positions at Orezone Gold Corp., Roxgold Inc., and Endeavour Mining Corp.

Kenneth C. McNaughton M.A.Sc., Director

Mr. McNaughton is a professional geological engineer with over 30 years of global experience developing and leading mineral exploration programs. He serves as Chief Exploration Officer and Director of P2 Gold Inc. Prior to P2 Gold, he was Chief Exploration Officer at Pretium Resources Inc., where he was responsible for greenfield exploration programs since joining in 2011.

Mr. Court Anderson, Director

Mr. Anderson is currently a lawyer at Henson & Efron, P.A. specializing in litigating business disputes. He was named a Minnesota Attorney of the Year in 2014 by *Minnesota Lawyer*. He has litigated disputes in dozens of federal and state courts throughout the country, with many of his cases involving shareholder and securities disputes, complex contracts, and a variety of business-related torts. Mr. Anderson regularly advises boards and officers on corporate governance issues and their legal obligations, mitigating legal risk and exposure.

Mr. Alexander Ruckdaeschel, Director

Mr. Ruckdaeschel brings extensive experience in the successful development of several small-cap and mid-cap emerging growth companies. Mr. Ruckdaeschelhas served on the Board of Directors of several successful public and private companies, including ERI, the largest fully integrated E-Waste recycler, and IT Electronics Asset Disposition provider in North America.

Mr. Ish Grewal M.A.Sc., P.Eng, Executive Vice President

Mr. Grewal has over 25 years of experience in the metallurgical and mineral processing industry, focused on research and development, mineral and hydrometallurgical processing, and metal recovery systems. Before joining EnviroMetal, he was president and co-founder of Met-Solve Laboratories Inc. He has published and presented numerous technical papers in the fields of hydrometallurgy, gravity concentration, and dense media separation.

Mr. Wayne Moorhouse, Chief Operating Officer

Mr. Moorhouse has extensive experience in corporate team building and overseeing company growth. He has held senior management positions with mining and civil construction companies and acted as the COO, CFO, Corporate Secretary or President of several TSX and TSX Venture Exchange listed companies and their subsidiaries, including Roxgold Inc., Midnight Sun Mining Corp., Silvermex Ltd., and Genco Resources Ltd. He has a proven record at an operating level and as a financial executive with experience covering all stages of a company's life, from incorporation through successful operations and mergers and acquisitions.

Mr. Hanif Jafari, M.Eng., Chief Technical Officer

Mr. Jafari, was most recently an associate researcher with UBC for over two years focusing on chemical analysis, analyzing test work data for processing plants, and applying processing methods such as floatation and leaching, gravity, and magnetic concentration. In addition, he has worked as a field and mining engineer on various projects from 2007 to 2011.

Jason Leikam, Vice President - Business Development

Mr. Leikam has over 25 years of experience in executive positions for a number of Canadian public companies. He has extensive experience in company formation and venture capital raising, particularly with early-stage exploration companies and clean technologies. Mr. Leikam joined EnviroMetal in 2019.