BacTech Environmental Corporation (CSE: BAC | OTCQB: BCCEF | FSE: 0BT1)

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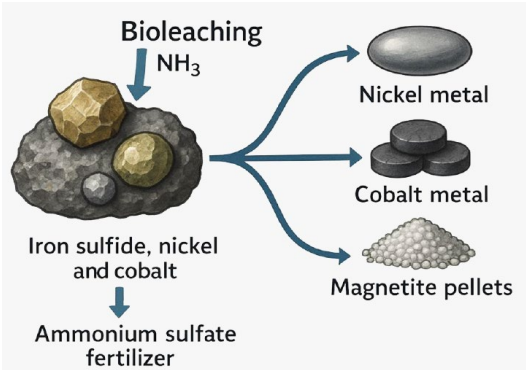
Ticker (Exchange)	CSE: BAC
Recent Price (01/05/26)	C$0.04
52-week Range	C$0.025 to C$0.06
Shares Outstanding	218.4 million
Market Capitalization	C$8.7 million
Average 3-month volume	182.2K
Insider Ownership +>5%	17%
Institutional Ownership	5%
EPS (Qtr. ended 09/30/25)	$0.00
Employees	8

Source: Yahoo! Finance, 1-year (C$), as of January 6, 2026.

Market data and reported cash balance are in C$; project economics in US$ unless noted

ZERO TAILINGS™ PROCESS



Source: BacTech Environmental Corporation.

COMPANY DESCRIPTION

BacTech Environmental Corporation ("BacTech" or "the Company") is a Canadian-based cleantech company that has spent more than three decades developing and applying **bioleaching†** to difficult ore bodies and mine waste. Management describes the business as "our bugs eat rocks," reflecting the use of naturally occurring bacteria to oxidize sulphide minerals, liberate metals, and neutralize harmful toxins in an atmospheric, water-based process. Using its proprietary **BACOX®** bioleaching technology, BacTech targets arsenic-rich **concentrates** and **tailings** (finely ground mine waste left after mineral extraction), converting long-standing environmental liabilities into stable, saleable products. The Company has built three commercial bioleach plants for gold under prior licensing arrangements in Western Australia, Tasmania, and China, and is now advancing an owner-operated bioleach facility in the Tenguel-Ponce Enríquez region of Ecuador, focused on refractory gold concentrates and arsenic-bearing materials. In parallel, BacTech is developing its patent-pending "**Zero Tailings™**" process—the Company's initiative to treat historic tailings to recover metal values from critical minerals and leave behind a more stable, lower-risk residue, with the goal of building a network of modular bioleaching and zero-tailings facilities that can clean up legacy mining waste while generating solid economic returns.

KEY POINTS

- ***Specialist in "problem" feed bioleaching.*** As one of only two companies worldwide with commercial bioleaching operations, BacTech is shifting from licensing to owning and operating projects that treat high-arsenic concentrates and different types of tailings.
- ***High-return Tenguel gold project in Ecuador.*** Tenguel, Ecuador is a fully permitted, high-return gold project. Phase 1 is designed for 50 tonnes-per-day and ~35,000 oz/year for ~$22 million in capex, with modeled revenue of ~$120 million at $3,500/oz and ~1-year payback. Expansion potential could be 250 tonnes-per-day and >100,000 oz/year under a 12-year tax holiday.
- ***Zero Tailings™ growth platform in critical minerals and green iron.*** BacTech's patent-pending Zero Tailings™ **flowsheet** in Sudbury (Sudbury, Ontario) targets **pyrrhotite** tailings to recover nickel, copper, and cobalt and produce **magnetite** and **ammonium sulphate** fertilizer, leaving inert residues for backfill and construction. The program is supported by recent **Patent Cooperation Treaty (PCT)** and "Zero Waste" patent filings.
- ***Strong Environmental, Social, and Governance (ESG) and green-finance angle.*** BacTech's water-based, closed-circuit processes aim to avoid arsenic-bearing off-gas and stabilize arsenic as ferric arsenate, supported by leachability testing and applicable standards. Compared to roasting and **pressure oxidation (POX)**, BacTech's approach may support green/social financing and carbon-credit benefits.
- ***Catalyst-Driven Story.*** Key catalysts include securing Tenguel financing, moving into construction and first gold pour, and advancing the Sudbury Zero Tailings™ program.
- ***Near-Term Liquidity.*** At September 30, 2025, the Company reported cash of C$81,000 and a working capital deficit.

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Executive Overview

Market data and reported cash balance are in C$; project economics in US$ unless noted

BacTech Environmental Corporation ("BacTech" or "the Company") is a Toronto-based clean-tech company focused on the environmentally responsible recovery of valuable metals from toxic concentrates and mine waste. Listed on the Canadian Securities Exchange (CSE: BAC), OTCQB (BCCEF), and the Frankfurt Stock Exchange (FSE: 0BT1), the Company uses its proprietary BACOX® bioleaching technology to harness naturally occurring bacteria to oxidize sulphide minerals, releasing metals such as gold, silver, copper, cobalt, and nickel while stabilizing arsenic and other harmful elements in a benign mineral residue. Relative to conventional high-temperature routes, such as roasting and pressure oxidation (POX), bioleaching is less energy-intensive and offers a lower-emissions pathway for processing arsenic-bearing concentrates and tailings.

BacTech's process development work is supported by applied research partnerships, including a collaboration with MIRARCO (Mining Innovation, Rehabilitation and Applied Research Corporation), a not-for-profit applied mining R&D organization and research arm of Laurentian University based in Greater Sudbury (Sudbury), Ontario. The Company has also benefited from Ontario's innovation programs and related research grant support. BacTech is one of only two companies worldwide with commercial bioleaching experience and has historically licensed plants in the 60 to 200 tonne-per-day concentrate treatment range to third parties; it is now pivoting toward building, owning, and operating its own facilities.

The BacTech Technology

BacTech's proprietary BACOX® bioleaching process is designed to treat high arsenic concentrates at a variety of scales using a modular system of up to about 2,000 tonnes-per-day, recovering metals while producing a stable residue. Concentrates are conditioned with nutrients and water, then fed into a cascade of open air bioleach tanks where the air, reagents, and naturally occurring bacteria oxidize sulphides and lock up arsenic in a stable form. It is a continuous process in which oxidation of the gold bearing arsenical sulphides occurs over a period of 5 to 6 days. The resulting slurry is separated with the solid stream passing through a gold circuit to produce **doré bars** (a semi-refined gold-silver bullion bar later shipped to a refinery), and the liquor stream is sent through neutralization and solid-liquid separation. Water is recycled back into the plant, while the solids from neutralization meet U.S. Environmental Protection Agency (EPA) criteria for safe disposal, aligning metal recovery with long-term environmental remediation.

For more than three decades, the Company has developed and promoted solutions that turn flotation concentrates and legacy environmental liabilities into new sources of value. Its flagship project in the Tenguel-Ponce Enríquez district of southwest Ecuador is expected to be South America's first commercial bioleach plant built to treat arsenic-rich concentrates sourced from multiple small and mid-sized producers in the district. The plant is designed under a build-own-operate model to avoid discharging untreated toxic waste by converting arsenic into a stable **ferric arsenate** residue and returning a benign, landfill-approved material, while providing formal employment with higher wages and safer working conditions than typical small-scale mining in the region. The initial scale of the project is to treat roughly 50 tonnes per day of concentrates with a later expansion up to 250 tonnes per day. The Tenguel Project is supported by a completed **bankable feasibility study** and key environmental permits, along with an **Investment Protection Agreement (IPA)** with the Government of Ecuador, and is positioned as an Environmental, Social, and Governance (ESG)-aligned solution that converts a long-standing pollution problem into an economic asset, verified by Moody's rating service.

Zero Tailings™: Turning Mine Waste into New Value

BacTech is advancing its Zero Tailings™ initiative (also referred to by the Company as the "Zero Waste Initiative"), a program designed to convert residual mine materials into high-value products while supporting more sustainable mining practices. In Canada, BacTech is advancing its Zero Tailings™ initiative in the Sudbury Basin (northeastern Ontario), which targets large pyrrhotite tailings deposits for the recovery of nickel, cobalt, and associated base

metals. Zero Tailings™ is BacTech's initiative to treat historic tailings to recover value and leave behind a more stable, lower-risk residue. The process is intended to capture critical minerals while creating additional revenue streams from co-products of iron, fertilizer, and silica or aggregate products, supporting Canada's circular-economy and low-carbon steel objectives.

As part of this effort, BacTech has filed its "Zero Waste" patent (April 7, 2025) for the bioleaching of pyritic minerals, covering the creation and sale of magnetite for steelmaking, ammonium sulphate fertilizer for agriculture, and recovery of base metals such as nickel, copper, and cobalt. Across these projects, the Company's goal is to show that environmental stewardship and profitability can coexist by combining biotechnology, ESG-focused operating practices, and innovative financing tools (such as green and social bonds) to clean up historical mine waste. The patent effectively addresses a long-standing hydrometallurgical challenge of how to separate iron from sulphur economically and create products of value in an environmentally responsible way.

As of June 18, 2025, the Company has filed a provisional patent application to expand its Zero Tailings™ processing technology beyond bioleaching to include other forms of leaching, building on a full patent application submitted in April 2025 that only focused on treating the iron and acid streams generated during bioleaching operations. The Zero Tailings™ platform is intended to transform mine waste into marketable products, including high-purity magnetite iron, ammonium sulphate fertilizer, and base metals such as nickel, copper, and cobalt. In doing so, the technology aims to reduce reliance on conventional mining, create new revenue streams from materials that were previously considered liabilities, and support broader resource-efficiency and waste-reduction objectives. Tailings materials typically contain residual metal values, which are sub-economic to recover by themselves. By converting the pyritic sulphides into ammonium sulphate and magnetite, this pays for the recovery of the residual metals.

Designed for flexibility, the Zero Tailings™ flowsheet, which includes the June 18, 2025 initiative, can be adapted to a range of mineral-processing scenarios, including the treatment of acidic runoff, legacy tailings at older mine sites, and as an add-on to existing mills looking to lower their production costs through the sale of ancillary products not originally accounted for in the mine plan. This creates opportunities to recover metals from low-grade or previously uneconomic material while addressing long-term environmental issues. Going forward, BacTech plans to work with industry partners to further test, refine, and scale the Zero Tailings™ concept, with the goal of demonstrating that responsible resource management and attractive project economics can be achieved together.

The process operates at atmospheric pressure and moderate temperature with conventional equipment and uses ammonia as the main reagent, which is a recognized commodity gaining traction in green economies. Green ammonia is emerging as a low-carbon fuel and process reagent for mining and metallurgical operations. It can replace diesel for on-site power and mobile equipment, act as a hydrogen carrier for high temperature processes, and serve as a selective reagent in hydrometallurgical circuits. Its ability to reduce emissions while supporting efficient metal recovery makes ammonia a key enabler of decarbonized, next-generation mineral processing. Since filing the patent in April 2025, BacTech has seen strong interest and engagement from senior industry participants in mining, green steel, and fertilizer, reflecting the broad applicability of the proposed technology.

What the Technology Provides

The Company's Zero Tailings™ initiative is designed to generate multiple value streams from mine waste, delivering usable iron, nickel, cobalt, copper, zinc, precious metals, fertilizer, recycled water, and construction materials, as described below, from what was previously an environmental liability.

- *Iron*. Recovered iron can be sold into iron and steel manufacturing markets, reducing reliance on newly mined ore and helping to lower the carbon intensity of steel production. The purity also allows it to be used as a feed for the pigment industry.

- *Nickel*. Low-grade nickel is recovered from waste materials, providing a more sustainable supply for use in electric vehicles, battery materials, and stainless steel. Other metals, such as cobalt, copper and zinc are also recoverable.

- *Precious metals.* Platinum group metals (PGMs), if present in sufficient quantities, can be extracted from the bioleach residue. When present in tailings, these metals are often refractory and released from the mineral matric by the bioleach process to allow them to be recovered from the bioleach residue.

- *Fertilizer*. The sulphide portion of the mineralization is converted directly in-situ into a fertilizer product of ammonium sulphate, supporting agriculture and helping close the loop between industry and the environment.

- *Water reuse*. Treated process water is cleaned and recycled back into the circuit, reducing freshwater demand and helping protect local ecosystems in mining-affected areas.

- *Construction materials*. Non-toxic byproducts are transformed into safe, durable aggregates for roadways and construction, turning what was once waste into lasting infrastructure.

An illustrative Zero Tailings™ case study illustrates how the process could recover cobalt and other metals from sulphide tailings while generating by-products such as ammonium sulphate and magnetite and reducing long-term tailings liabilities.

Tenguel Economics and Zero Tailings™ Growth

BacTech's near-term financial outlook is anchored by its Tenguel Project in Ecuador, with additional upside from the planned Zero Tailings™ initiative in Sudbury, Ontario. The initial Tenguel plant (Phase 1) is expected to cost approximately $22 million and is designed to process 50 tonnes-per-day, producing about 35,000 ounces of gold per year. According to Company estimates, using a gold price assumption of $3,500 per ounce, this equates to more than $120 million in annual revenue and an after-tax payback period of roughly one year.

A planned Phase 2 expansion at Tenguel would lift throughput to 250 tonnes-per-day and increase annual production to more than 100,000 ounces of gold per annum. The capital estimate for the expansion is estimated to be $80 million.

Based on Company estimates, Phase 1 and Phase 2 together are expected to require approximately $100 million in capital and BacTech believes this would generate more than $350 million in revenue, supported by relatively low operating costs of about $212 per tonne of concentrate feed and strong EBITDA margins. Project risk is mitigated in part by the Government of Ecuador's Investment Protection Agreement, which provides for international mediation, tax stability, protection of property rights, and 12 years of income tax exemption. Together, these elements position Tenguel as a potentially high-return, scalable asset with leverage to higher metal prices.

Beyond Ecuador, BacTech's Zero Tailings™ initiative offers a second leg of growth by monetizing metals and byproducts from legacy mine waste. The program is designed to recover iron, fertilizer products, and base metals from large pyrrhotite tailings deposits, creating new revenue streams while reducing long-term environmental liabilities. Over time, BacTech aims to build a portfolio of projects that combine remediation, critical-minerals supply, and attractive project economics.

Corporate and Capital Structure

BacTech Environmental Corporation was incorporated on October 5, 2010, under the Canada Business Corporations Act, following a restructuring that separated the remediation-focused business from its former mining parent. Through a Plan of Arrangement, the Company received a perpetual, exclusive, royalty-free license to use its BACOX® bioleaching technology in the remediation of mining wastes, creating a dedicated vehicle to target difficult sulphide concentrates and legacy tailings. The technology has historically been applied to refractory gold and polymetallic sulphide ores and concentrates and now underpins BacTech's strategy of using bioleaching to remove harmful elements, such as arsenic and sulphur, while generating revenue from recovered metals.

Today, BacTech operates through a relatively simple structure, with BacTech Environmental Corporation as the parent and operating subsidiaries that include BacTechverde S.A.S., its wholly owned Ecuadorian subsidiary. BacTechverde S.A.S. holds 100% of the Tenguel Projects, which include the planned bioleaching facility in the Tenguel-Ponce Enríquez region and related assets. This straightforward ownership structure provides clear alignment between the public company and its underlying operating assets, while also simplifying governance, financing, and potential future partnerships at the project level. BacTech has a small corporate team and is headquartered in Toronto, Canada. The Company employs 8 individuals.

From a project-financing standpoint, BacTech has used royalties and streaming-style agreements to help advance Tenguel while managing equity dilution. During early project development, the Company granted certain shareholders a joint 2% **Net Smelter Royalty (NSR)** on production from the Tenguel plant once it is in operation, in exchange for participation in a private equity placement. The NSR falls away once the investor has received a 200% after-tax return on their investment, giving early backers direct exposure to project cash flow while limiting the long-term burden on the asset.

BacTech entered into a silver royalty transaction with Silver Crown Royalties Inc. to support financing for Tenguel. Under the agreement, Silver Crown is entitled, for 10 years, to the cash equivalent of the greater of 90% of the silver processed at the facility or a minimum of 35,000 ounces per year, with quarterly payments becoming due starting one year after commercial operations commence. BacTech expects annual silver production of roughly 40,000-45,000 ounces, representing about 1.2% of projected plant revenues. In exchange, Silver Crown will provide C$4.0 million in common shares, issued in tranches tied to key milestones, and BacTech has no royalty payment obligation until the plant is built and commissioned.

Intellectual Property

Zero Tailings™ Patent Family

BacTech's intellectual property is built around its proprietary bioleaching platform (BACOX®) and the Zero Tailings™ (also referred to as "Zero Waste") initiative. The Company first filed a provisional patent application in March 2022 for a novel bioleaching process to treat pyrrhotite tailings for green iron and nickel-cobalt recovery, with co-production of ammonium sulphate, establishing core protection around the use of natural bacteria to solubilize iron sulphides and recover base metals for steel and battery applications with co-production of iron and fertilizer. In April 2024, BacTech followed with an expanded provisional patent covering a first-of-its-kind zero-waste bioleach flowsheet that converted all minerals present in tailings into products with residual solids repurposed as construction materials. A key advantage of repurposing bioleaching for zero-waste initiatives is that the process operates in a sulphate medium, rather than chloride or nitrate systems. This limits the indiscriminate mobilization of multiple elements into solution. As a result, conventional metallurgical recovery techniques can be applied to selectively extract valuable metals from the leach solution, achieving high marketable purity with minimal contamination.

Building on this work, BacTech lodged a full "Zero Waste" patent in early April 2025, described by the Company as a global filing validated through lab scale testing with MIRARCO in Sudbury (Ontario-based not-for-profit applied mining R&D group affiliated with Laurentian University). This patent-pending Zero Tailings™ process combines bioleaching with a defined sequence of downstream steps to generate multiple saleable products from sulphide-rich mine waste, including high-purity magnetite or iron feedstocks for the green steel and pigment industries, ammonium sulphate fertilizer, base and critical metals (nickel, copper, cobalt, zinc and potentially rare earths/PGMs, gold, and silver), and inert silicate residues suitable for backfill or geopolymer construction materials. Standard utility patent terms in most jurisdictions are about 20 years from the relevant non-provisional filing date, so an April 2025 filing, if granted and maintained, would normally be expected to protect the core Zero Tailings™ flowsheet into the mid-2040s.

Extension Beyond Bioleaching

In June 2025, BacTech filed a further provisional patent aimed at extending its zero-waste concept beyond traditional bioleaching circuits to include other leaching operations. This application targets acidic iron streams generated by any mineral-processing operation and describes using ammonia to convert these streams into marketable iron products and ammonium sulphate fertilizer while enabling recovery of contained metals and reducing or eliminating waste sludge. The Company views this "zero-waste beyond bioleaching" IP as a way to apply its processing philosophy across a broader range of commodities and flowsheets, potentially allowing BacTech to work with both its own projects and third-party operations that produce iron- and acid-rich residues. This process is also appropriate for treating acid mine drainage (AMD) run-off, which can be transformed into valuable products rather than neutralized as a sludge and disposed as a waste. This converts a perpetual environmental liability into revenue generating income stream.

Sudbury Process Patent Filings and Scope

BacTech has moved to secure formal intellectual property protection around its Sudbury pyrrhotite initiative by filing a series of process patents that cover the treatment of iron- and sulphur-bearing tailings. The patented flowsheet is designed to convert nickel, copper, zinc- and cobalt-bearing iron sulphide tailings, such as those in the Sudbury Basin, into several saleable products: high-purity magnetite suitable as a furnace-ready feedstock for green steel, ammonium sulphate fertilizer produced via microbial extraction, recovered nickel, copper, and cobalt as high-purity battery metals, and an inert silicate residue that can be used as construction material or paste backfill. This water-based, ammonia-driven process eliminates roasting and smelting off-gases, removes the source of acid rock drainage, and taps into a large global inventory of mine tailings, estimated at roughly 12 billion tonnes per year, by transforming a long-lived environmental liability into a suite of marketable commodities.

To protect this processing route internationally, BacTech has filed Patent Cooperation Treaty (PCT) applications titled "Process for Treating a Material Containing Iron and Sulphur" (April 2024), claiming priority from Australian patent application 2023901046, and a subsequent PCT application in April 2025 for "A Process for Treating a Sulphide Material Containing Iron and Sulphur," which claims priority from the earlier international filing. Both applications designate a broad list of PCT contracting states and are intended to secure coverage for the Sudbury flowsheet and related applications in key mining and fertilizer jurisdictions.

Legacy Bioleach IP and Proprietary Know-How

Beyond the Zero Tailings™ patent family, BacTech has historically protected its technology through process patents in selected jurisdictions, including earlier IP around onsite ferric sulphate production from pyrite for arsenic control, which emerged from its Snow Lake work (2012). Management emphasizes that much of the competitive moat resides in proprietary know-how: the design and scale-up of large-scale bioleach reactors, selection and management of microbial consortia, integration of bioleaching with downstream metal recovery, and optimization of operating conditions for different feed materials. The Company notes that because the bacteria themselves are naturally occurring and cannot be patented as organisms, it focuses its formal IP protection on the application of these microbes within engineered processes, while maintaining detailed operating parameters and flowsheet refinements as confidential know-how. Together, the formal patents and embedded process expertise form the core of BacTech's intellectual property position.

Company Leadership

BacTech is led by a long-tenured leadership team with deep experience in bioleaching, mining operations, and project finance. President and CEO Ross Orr has been involved with the business since the mid-1990s and has guided BacTech since its formation in 2010, while Chief Financial Officer Louis Nagy, Chief Operating Officer David Tingey, and the Company's technical and environmental leads, Dr. Paul Miller and Kate Castro, bring decades of specialized expertise in industrial bioleaching, mine development, and ESG-focused permitting. Biographies for each of these key executives are provided below.

Management

Ross Orr, President & Chief Executive Officer

Ross Orr has been associated with BacTech since bringing the Company from Australia to Canada in 1995, where he played a central role in its IPO in 1997. In 2010, following the restructuring that split BacTech Mining into two entities, Ross assumed leadership of BacTech. Under his direction, the Company has become a pioneer in applying bioleaching to treating concentrates, remediating mine waste, and recovering valuable metals. Ross continues to guide BacTech's strategy, growth, and commitment to developing sustainable mining solutions that benefit both industry and communities.

David Tingey, Chief Operating Officer

David Tingey joined BacTech as Chief Operating Officer in early 2022, bringing extensive international mining and sustainability expertise. Over his career, he has held senior roles with Rio Tinto, Walter Energy, Bluestone Resources, New Pacific Metals, Global Alumina, CCC Construction, and Western Coal. David is recognized for building operational capacity, implementing sustainability best practices, and driving positive change at the site level. His experience spans construction, project development, and corporate responsibility across multiple jurisdictions. At BacTech, David applies this background to overseeing day-to-day operations, ensuring projects are executed efficiently while aligning with the Company's mission of responsible and sustainable mining.

Louis R. Nagy, Chief Financial Officer & Corporate Secretary

Louis R. Nagy has served as BacTech's Chief Financial Officer for more than a decade, providing strategic financial oversight and governance. A Chartered Accountant with over 28 years of professional and industry experience, Louis has worked extensively in financial reporting, treasury, reorganizations, IT system implementation, and investment banking. He has held senior finance roles, including CFO positions, in both public and private companies. At BacTech, Louis manages financial operations, corporate compliance, and capital structure, ensuring the Company remains positioned for sustainable growth. His broad expertise supports BacTech's mission to deliver innovative environmental solutions while maintaining financial strength and transparency.

Dr. Paul C. Miller, Vice President, Technology and Engineering

Dr. Paul Miller brings more than 30 years of industrial experience in bioleaching and mining applications. He joined BacTech Australia in 1996 and has since led the technical development of projects, from early test work through to design and execution. Dr. Miller oversees all BacTech testing programs conducted at ALS Laboratories in Perth, Australia, ensuring rigorous scientific standards. His career began in the mid-1980s evaluating bioleaching against conventional technologies, with a particular focus on refractory gold projects worldwide. Today, he continues to guide BacTech's technology strategy, advancing innovative approaches to remediation and supporting the Company's role as a leader in sustainable mining. Dr. Miller is the inventor of the Company's patent filing for Zero Tailings bioleaching.

Paul Anderson, Vice-President, Project Evaluation and Commissioning

Paul Anderson is a chemical engineer with over 35 years of experience in the metals and mineral processing industry. Paul has worked in many different countries and has over 20 years of experience in practical bioleaching design, commissioning and operation, previously working as the Plant Manager at a large commercial bioleaching facility in Kazakhstan and was recently the Commissioning Manager of the Massawa bioleaching project in Senegal. Since joining BacTech Environmental, Paul has worked on the Tenguel gold bioleaching design and various conceptual bioleaching opportunities. His experience covers all aspects of process design, operations management, project management, and study management.

Kate Castro, Environmental Consultant

Kate Castro began consulting for BacTech in 2022, bringing over 16 years of experience in environmental and sustainability management in the mining and oil sectors. She has led projects from development through to operation, ensuring compliance with international standards and best practices. Kate holds a Master's degree in Safety, Health, and Environment from Universidad de Huelva in Spain, and a degree in Chemical Engineering. In Ecuador, she has built strong relationships with government authorities and industry groups, successfully managing permitting processes and contributing to BacTech's Sustainable Bond Framework certification. Her expertise is central to advancing the Company's environmental and social commitments.

Steve Roebuck, Geological Consultant

Steve Roebuck has over 30 years of experience in the mining and exploration industry, including open-pit and underground mine operations. Steve has held senior management positions with junior exploration companies and small junior production companies. In addition, he has capital market expertise, including M&A strategies, junior financing, investor relations and marketing, and is currently the President and CEO of Avidian Gold Corp. and High Tides Resources (iron ore exploration).

Dr. Nadia Mykytczuk, President and Chief Executive Officer of Mirarco, Strategic Partner to BacTech

A seasoned research scientist focused on mine waste microbiology and the development of applications for bioleaching and bioremediation, Dr. Mykytczuk works closely with the BacTech scientific team to co-develop and pilot test bioleaching applications in addition to exploring other novel uses of the shared technology. Dr. Mykytczuk is currently the CEO and President of MIRARCO and Executive Director of the Goodman School of Mines, Laurentian University in Sudbury, Canada, a leader in the development and deployment of innovative solutions responding to the needs of the mining industry. Regarded as one of Canada's top experts in biomining and bioremediation, she has worked for 20 years in the field of mine waste microbiology and the development of applications for bioleaching and bioremediation. From 2016 to 2021, she held the role of an Industrial Research Chair in Biomining and Bioremediation, and Science Communication at Laurentian University. Dr. Mykytczuk is a graduate of Laurentian University with a Doctor of Philosophy (PhD) in Adaptation to Environmental Stressors in Acidithiobacillus ferrooxidans, and Carleton University with Bachelor of Science (BS) in Environmental Science.

Core Story

BacTech Environmental Corporation ("BacTech" or "the Company") is a Toronto-based company focused on advancing social and environmental sustainability in the mining and resource sectors. Publicly traded on the Canadian Securities Exchange (CSE) under the ticker BAC, OTCQB (BCCEF), and the Frankfurt Stock Exchange (FSE: 0BT1), BacTech has spent more than 35 years developing and applying bioleaching to difficult ore bodies and mine waste using naturally occurring bacteria to oxidize sulphide minerals, liberate metals, and neutralize harmful toxins. Management often summarizes the business as "our bugs eat rocks," reflecting an approach that recovers valuable metals from concentrates, tailings, and other waste streams while converting long-standing environmental liabilities into safe, revenue-generating assets. Processes that would normally take nature many years can be completed in a matter of six days, without harming people, wildlife, or the environment.

BacTech is one of only two companies worldwide with commercial bioleaching operations. Historically, the Company licensed its technology into third-party projects, participating in three reference plants in Australia and China with throughputs ranging from 60 to 200 tonnes-per-day. Building on that operating history, BacTech now focuses on building, operating, and owning its own assets in order to capture a greater share of the value created by its technology. The Company works with governments, industry partners, and local communities to deploy bioleaching and remediation solutions that clean up contaminated sites, protect surrounding ecosystems, and improve quality of life in affected areas. Its business model emphasizes projects that can scale, generate attractive economics, and meet rigorous environmental standards, with the goal of aligning investor returns with long-term benefits for host communities and the environment. There are more than 20 commercial bioleaching operations worldwide, operating across a wide range of geographies and climates, from roughly -40°C to +40°C. BacTech has licensed three of these processes.

Within this framework, BacTech has carved out a specialty in treating arsenic-rich material that most operators avoid, "chasing arsenic while everyone else runs away," by using its proprietary BACOX® bioleaching technology, which utilizes bacteria to safely unlock metals from complex concentrates. The Company's first owned project in Ecuador (the Tenguel Project) is fully permitted and considered shovel-ready, designed to process high-arsenic, gold-bearing concentrates produced in the Ponce Enríquez district. In parallel, BacTech has filed what it views as a potentially game-changing patent for processing pyrrhotite and pyrite tailings to recover strategic metals and produce an organic fertilizer product (the Zero Tailings™ process). This work is intended to support a no-waste solution that turns problematic mine waste into multiple saleable outputs while addressing some of the mining industry's most persistent environmental challenges.

From an economic standpoint, BacTech's near-term story is anchored by its Tenguel Project in Ecuador, with additional upside from the planned Zero Tailings™ initiative in Sudbury, Ontario. The initial Tenguel plant (Phase 1) is currently modeled at approximately $22 million in capital cost for a 50 tonne-per-day operation producing about 35,000 ounces of gold per year. According to Company estimates, using a gold price assumption of $3,500 per ounce, this production profile could translate into more than $120 million in annual revenue and an after-tax payback period of roughly one year. A planned $80 million Phase 2 expansion at Tenguel would scale throughput to 250 tonnes-per-day and lift annual production to more than 100,000 ounces of gold.

On these Company estimates, Phase 1 and Phase 2 together are expected to require approximately $100 million in capital and could generate more than $350 million in revenue over the modeled period, supported by relatively low operating costs of about $212 per tonne and strong EBITDA margins. Project risk is further mitigated by the Government of Ecuador's Investment Protection Agreement, which provides for international mediation, tax stability, protection of property rights, and a 12-year income-tax exemption.

Beyond Ecuador, BacTech's Zero Tailings™ initiative is intended to provide a second leg of growth by monetizing critical metals and byproducts from legacy pyrrhotite tailings in the Sudbury Basin, creating new revenue streams from iron, fertilizer products, and base metals while reducing long-term environmental liabilities and building a broader portfolio that combines remediation, critical-minerals supply, and attractive project economics. Rare earths are also amenable to bioleaching in a similar manner to the previous BacTech applications.

Management frames BacTech's strategy as a response to what it sees as a "sustainability paradox" in mining: whether resource extraction can truly be compatible with environmental responsibility. The Company aims to demonstrate that it can by structuring projects such as the Tenguel facility so that financing, operations, and community outcomes are aligned. The Tenguel Project is being financed primarily at the project level through BacTech's wholly-owned Ecuadorian subsidiary, BacTechverde S.A.S., where participating investors are expected to receive a share of project cash flow until their capital is repaid, after which their interest converts into an equity position at the project level. By processing arsenic-rich concentrates in-country rather than exporting them, BacTech seeks to avoid import and export taxes, support local economic development, and create a replicable template for future regional hubs in Latin America, including potential expansion into Peru targeting copper, gold, and silver projects (described on page 21).

At its core, BacTech's proprietary BACOX® bioleaching process is designed and deployed to solve a specific problem in the gold industry: high-arsenic, refractory concentrates that are difficult to treat and often carry heavy smelter penalties. In districts such as Ponce Enríquez in southern Ecuador, more than 100 underground mines produce high-grade gold ore every day, but the concentrates also contain very high arsenic levels. Chinese smelters dominate this market, where management estimates they impose a 1% payability penalty for every 1% arsenic above a 10% threshold, and are slow to pay, which severely limits options for local miners. BacTech attributes part of this pricing pressure to policy-driven costs, noting that China imposed a 13% import tax on high-arsenic gold concentrates in October 2021 and that Ecuador also levies a 3% export tax on the gold value, which together have contributed to miner payables falling to roughly 50% of contained gold value in the local market. Daily exports from the area are estimated at roughly 250 tonnes-per-day of **arsenopyrite** concentrate, meaning a significant volume of material carries both economic and environmental challenges.

Bioleaching offers an alternative to roasting (high-temperature oxidation that can generate arsenic-bearing off-gases) and pressure oxidation (POX) (autoclave-based oxidation under high temperature and pressure) for these arsenic-rich concentrates. In BacTech's flowsheet, concentrate is ground, slurried, and fed into a series of aerated reactors containing specific bacteria that oxidize sulphides and breaks down the refractory matrix of iron, sulfur, and arsenic to liberate the gold. BacTech's bioleaching oxidizes the sulphide minerals, dissolving them into solution mainly as sulphates and locking up arsenic in a stable mineral form. The result is a safer, oxidized solids residue in which the gold and silver are easier to extract using standard agitation leaching, followed by metal recovery using either a **Merrill-Crowe circuit** (where dissolved gold and silver are precipitated from clarified solution using zinc) or a CIP/CIL and elution circuit (where activated carbon adsorbs dissolved gold from slurry, then the gold is stripped and produced as doré). The final outputs are doré bars and benign, neutralized tailings that meet regulatory standards, such as U.S. Environmental Protection Agency (EPA) leachability thresholds.

In collaboration with Peñoles, BacTech successfully operated a demonstration-scale bioleaching plant designed to treat chalcopyrite concentrates, one of the most refractory and challenging copper sulphide minerals. The program validated BacTech's proprietary bio-oxidation expertise under real operating conditions, demonstrating enhanced copper liberation at lower capital and energy intensity compared to conventional smelting or pressure oxidation.

The demonstration plant confirmed the technical viability of bioleaching as a scalable, environmentally responsible alternative for processing complex copper concentrates, particularly those containing impurities that attract smelter penalties. Results from the program helped establish bioleaching as a practical solution for unlocking value from difficult sulphide ores while reducing emissions, reagent consumption, and overall environmental footprint. This project forms an important part of BacTech's technical foundation and underscores the adaptability of its bioleaching platform across gold, copper, and polymetallic sulphide systems.

Vision & Core Values

BacTech frames its mission around becoming a global leader in sustainable resource solutions, using bioleaching and remediation technologies to align metal recovery with environmental restoration. The Company's vision emphasizes that responsible extraction should support, rather than damage, local ecosystems and communities, creating a balance between economic returns, social well-being, and environmental stewardship. Its core values focus on sustainability and innovation, with a commitment to develop and apply new technologies that reduce environmental impact while unlocking value from difficult ores and waste streams. BacTech also highlights collaboration with governments, communities, and industry partners, a strong culture of integrity and transparency, and a focus on social responsibility and operational excellence as central to how it does business.

Environmental & Social Benefits

BacTech places safety and environmental performance at the center of its operating model, particularly through the use of bioleaching. The Company's BACOX® process relies on naturally occurring bacteria to oxidize sulphide minerals in mining waste, a method that operates in aqueous solution at relatively low temperatures and is inherently safer for workers and surrounding communities than high-temperature roasting or pressure oxidation.

In addition to recovering valuable metals, the process stabilizes harmful elements, such as arsenic, by converting them into ferric arsenate, a benign mineral form that is approved by the U.S. EPA for landfill disposal. Arsenic is fixed in this stable phase and mercury, where present, remains in the solid stream and is captured under controlled conditions in the downstream gold recovery circuit rather than being released as off-gas.

Key environmental benefits of BacTech's technology include:

- *No harmful off-gases*. The bioleaching circuit is water-based and operates at relatively low temperatures, avoiding high-temperature roasting or smelting and the associated release of arsenic, mercury, and sulphur-bearing gases.

- *Green chemistry approach for the "zero-tailings" initiative*. Ammonia is used in place of strong acids or exotic reagents for neutralization and product formation, which reduces chemical risks, lowers CO_2 emissions from carbonate reagents, and enables selective metal recovery in the Zero Tailings™ flowsheet.

- *Zero Tailings™ focus*. Mine waste and iron-rich acidic streams are converted into useful products, such as iron making feedstocks and ammonium sulphate fertilizer, decreasing the need for fresh mining of these materials and helping to lower overall emissions and long-term waste liabilities.

The process design also emphasizes improved water stewardship and reduced tailings footprints. Neutralization and polishing stages are intended to produce treated water that can be recycled back into the plant or discharged in compliance with local regulations, reducing freshwater withdrawals and improving downstream water quality. Because Zero Tailings™ flowsheets generate no waste solid products, it has the potential to reduce the size and long-term monitoring requirements of conventional tailings storage facilities and to support future land reclamation and alternative land uses once operations cease.

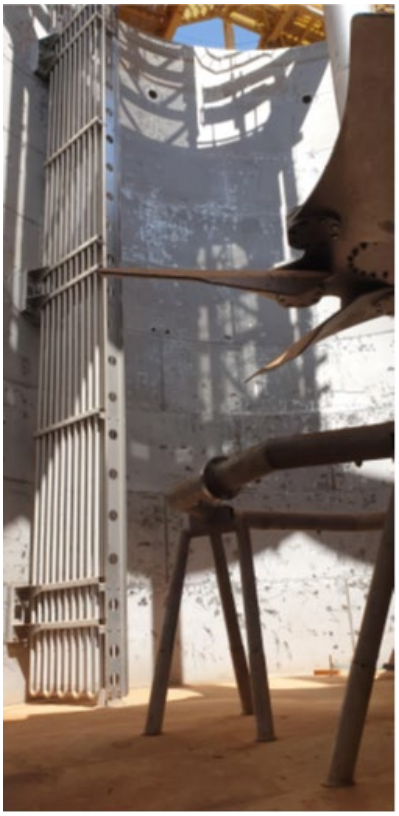
On the social side, BacTech's Tenguel project (described on pages 17-21) is structured to formalize and upgrade existing small-scale mining activity rather than create a new, standalone industrial footprint. By aggregating arsenic-rich concentrates from numerous small and mid-sized producers, the plant offers a compliant outlet for material that is otherwise difficult to treat, alongside more transparent pricing and safer handling of toxic elements. Land arrangements in Ecuador are designed to preserve existing cocoa farming while creating formal employment opportunities with better wages, training, and health and safety standards than typical artisanal operations in the region. Similar principles are expected to guide future Zero Tailings™ projects at legacy mine sites, where remediation, long-term water management, and community relations are often key constraints on redevelopment.

From a governance and permitting perspective, BacTech's model is built around early regulatory engagement and ongoing monitoring rather than one-time compliance. Environmental impact studies, consultation permits, and investment protection agreements are secured prior to construction, and ferric arsenate residues are subject to routine leachability testing (e.g., **U.S. EPA Toxicity Characteristic Leaching Procedure (TCLP)** and, where applicable, European standards) over the life of a plant to confirm continued stability. This framework aligns with the expectations of ESG-focused investors and lenders and provides a basis for potential green or social bond financing and, where applicable, carbon credit opportunities linked to avoided emissions versus roasting and conventional waste treatment. Through these measures, BacTech aims to provide practical, scalable solutions for mine waste management that support both environmental protection and improved social outcomes in mining-affected communities.

THE BACTECH TECHNOLOGY: THE BACOX® BIOLEACHING PROCESS

Figure 1
OUTSIDE A TANK

INSIDE A TANK



Source: BacTech Environmental Corporation.

BacTech's bioleaching circuit for refractory gold treatment is a six-step process that turns difficult sulphide concentrates into saleable metal and safer tailings. Figure 1 shows the outside and inside of a tank for context. First, the concentrate is ground and mixed with water in the grinding circuit to form a fine slurry. That slurry is pumped into stainless-steel bioleach reactors, where naturally occurring bacteria get to work. In this biooxidation step, the microorganisms oxidize the sulphide minerals that hold the precious metals, effectively breaking open the ore and releasing the gold into solution.

The acidic solution coming out of biooxidation is then neutralized with limestone, which raises the pH and causes iron and other dissolved metals to precipitate, leaving a stable residue. The washed, oxidized solids are repulped and sent to a conventional agitation leach circuit, where the liberated gold is dissolved into solution. This gold-bearing solution is treated in a Merrill-Crowe circuit: it is clarified, de-aerated, and contacted with zinc dust so that gold and silver precipitate out and can be collected in filter presses. Finally, the precipitate is dried and smelted to produce a gold-silver doré bar (a partially refined metal bar that comes out of a mine's processing plant before it goes to a full refinery), while the remaining tailings are neutralized and ready for storage as non-acid-generating material. In practical terms, the process is designed to recover metal from challenging concentrates while leaving behind tailings that are far less harmful to the environment than untreated sulphide waste.

Feed Characteristics and Applicability of Bioleaching

According to BacTech, the Company's stirred-tank bioleaching systems are primarily designed for refractory gold concentrates, but the same principles can be applied to base metal sulphide concentrates and arsenic-bearing copper minerals, such as enargite. Among the roughly 22 bioleach projects implemented globally, the lowest sulphide grade treated in concentrate form has been about 4% sulphide with no need for external heating. Because sulphide oxidation is exothermic, materials with sulphide contents below this level can still be treated, provided the plant is engineered to supply heat rather than remove it.

For agitated reactors, the target grind is typically 80% passing 75 microns to ensure adequate suspension and mixing; where most concentrates already meet this specification, although a regrind circuit can be added if required. In terms of arsenic, most commercial bioleach plants operate on feeds containing around 8% arsenic, and some have successfully handled up to 15%. BacTech's Ecuador plant has been designed specifically for these higher arsenic levels.

BacTech has also evaluated the applicability of bioleaching to copper materials. For direct bioleaching to operate effectively on these materials, a sulphide component is needed to provide the energy source for bacterial growth and reproduction. A demonstration plant was built in conjunction with Peñoles in Mexico for the treatment of a dirty chalcopyrite concentrate producing LME grade A cathode copper, which operated successfully treating daily tonnage quantities of feed material. Where sulphides are absent or very low, an indirect approach can be used, in which bacterial solutions are first generated on a separate sulphide-rich substrate and then applied as a **leachate** to the target material.

To date, BacTech's projects have mainly focused on sulphide-bearing feeds, with limited testing on residues and slimes from refineries. However, given a detailed feed chemistry and mineralogy, the team can usually predict whether a direct or indirect bioleach system is appropriate and design a flowsheet accordingly.

Metallurgical Recoveries, Selectivity, and Product Quality

In refractory gold applications, BacTech reports typical gold recoveries of 94% to 96%. While recoveries above 98% to 99% may be achievable in some cases, the incremental gain is not always economic once additional capital and operating costs are considered. Silver recoveries are generally lower due to mineralogical constraints, typically in the 75% to 85% range. For base metals such as copper, nickel, cobalt, and zinc, bioleach extraction is often reported at greater than 98%. In practice, mine-to-saleable-product recoveries are commonly lower than "leach-only" recoveries due to normal downstream losses during solution processing, precipitation, **electrowinning**, refining, and finishing steps.

Product outputs are matched to market requirements and end-user specifications. Gold and silver are produced as doré bars for final refining. Copper may be recovered as LME Grade A cathode via electrowinning, or as an intermediate product (such as a hydroxide or sulphide precipitate) for sale to smelters or refiners. Nickel and cobalt are commonly produced as **mixed hydroxide precipitates**. BacTech indicates it has been able to meet industry purity requirements for these product streams.

Selectivity is managed through operating conditions and flowsheet design, since different minerals respond very differently to bioleach parameters. Chalcopyrite, for example, can achieve very high copper extraction when temperature, redox potential, and residence time are controlled to avoid **passivation**, whereas poorly controlled conditions can materially reduce recovery. In mixed feeds containing arsenopyrite and chalcopyrite, the process can be configured to solubilize both copper and arsenic, followed by downstream separation that produces a stable ferric arsenate residue for permanent arsenic disposal alongside a marketable copper product. This ability to tune conditions to the specific mineralogy is a core element of BacTech's process design approach.

Environmental Performance of Bioleaching

<u>Arsenic and Mercury Management</u>

Bioleaching offers a materially different environmental profile compared to conventional roasting. In a roasting circuit, arsenic is volatilized and must be captured from off-gases, converted into **arsenic trioxide**, and stored indefinitely in sealed containers, which remain hazardous in perpetuity. Mercury, if present, is also volatilized and must be condensed and scrubbed from large volumes of gas, a process that becomes more difficult when feed grades and throughput vary.

By contrast, BacTech's bioleach process produces no gaseous arsenic or mercury emissions. Arsenic in the feed is oxidized and precipitated as ferric arsenate, an extremely stable compound in which arsenic is bound within a dense, "sponge-like" matrix and present only at modest concentrations. If mercury is present in gold-bearing feeds, it remains inert during the bioleach step and does not volatilize. Instead, it is carried forward and co-extracted with the gold in the downstream recovery circuit, after the bulk solid mass has been reduced from many tonnes of concentrate to a few kilograms of high-value metal-bearing material. At that stage, mercury can be separated and fully captured under controlled, small-scale laboratory conditions, prior to pouring the final doré that is dispatched to the refinery.

Long-Term Stability and Testing of Ferric Arsenate Residues

The stability of ferric arsenate residues is a key consideration for regulators and communities. BacTech notes that most projects use the U.S. EPA Toxicity Characteristic Leaching Procedure (TCLP) as the primary test for leachability, while some European projects have also applied the DIN 14 protocol. TCLP testing is typically performed early in laboratory test work to guide plant design and to support environmental permitting. For commercial operations, TCLP tests are then run on ferric arsenate residues as they are produced at regular intervals over the long term to confirm ongoing stability.

The final ferric arsenate product generally contains significant amounts of gypsum and ferric hydroxide formed during neutralization of the bioleach liquor. These phases provide buffering capacity and protective alkalinity, and they act as binding agents that reinforce the ferric arsenate matrix. According to BacTech, ferric arsenate produced more than 40 years ago at early bioleach projects continues to pass annual TCLP tests, and the Company has not experienced a TCLP failure in its own work. This performance is attributed to tight control of the neutralization step, which is designed from the outset to ensure that the ferric arsenate product remains stable and environmentally acceptable over the long term.

Project Experience

Since 1994, BacTech has been licensing and building bioleaching plants for clients around the world, giving the Company a long operating history with its technology. Prior reference projects include a 120 tonne-per-day proof-of-concept commercial plant at the Youanmi Mine in Western Australia, Australia, that operated for three years at full capacity until mine closure; a 50 tonne-per-day facility in Tasmania, Australia, which ran at full capacity until mine closure for 15 years; and a 200 tonne-per-day toll treatment plant in Laizhou, China, which operated at full capacity for a number of years. Together, these projects demonstrate BacTech's ability to design, construct, and operate bioleaching plants from pilot scale through to long-life commercial operations, supporting its plan to now build and own its own facilities.

Refractory Arsenical Gold Market Opportunity

An independent market study reporting the global supply of refractory gold concentrates requiring oxidation treatment by methods such as bio-oxidation, notes that refractory deposits have grown from about 10% of world gold production in 1989 to roughly 25% to 30% today, with approximately 25 million ounces of gold per year coming from refractory resources. Many of these deposits and concentrates carry high levels of arsenic and other penalty elements, which carries significant environmental and technical challenges for conventional roasters and smelters and has led to progressively tighter specifications, particularly at Chinese facilities that have historically dominated this trade. As a result, a portion of the global refractory resource base remains underdeveloped or is processed on sub-optimal commercial terms.

The market study compared mainstream treatment routes for refractory gold, including roasting, pressure oxidation, biooxidation, and the Albion Process, and concluded that mine-site pressure oxidation tends to be favored for very large projects, while biooxidation is often the more attractive option for small to mid-scale producers. The study highlights that in 2014 only about 6,000 tonnes-per-day of concentrate were treated in biooxidation plants versus 12,500 tonnes-per-day via pressure oxidation, leaving a large balance of refractory material, nominally around 20 million ounces of gold per year, being dispatched to smelters under terms that are often punitive for arsenic-rich

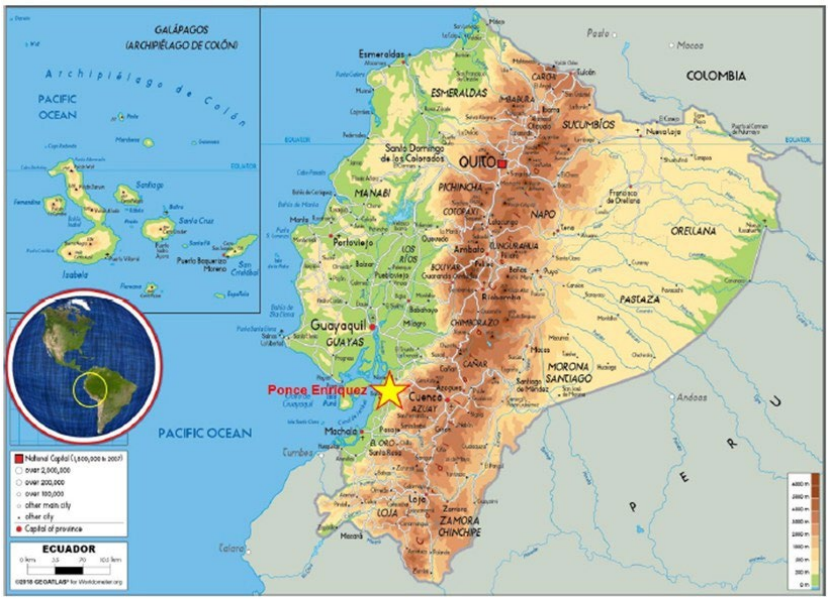
and lower-grade concentrates. Capital and operating benchmarks presented in the report suggest that biooxidation offers a meaningful cost advantage over pressure oxidation and roasting on a per-tonne-of-sulphide basis, particularly for lower grade concentrates that are typically penalized in the smelter system.

The study argued that purpose-built third-party facilities, such as biooxidation, can offer mine owners higher payables, lower penalty charges on arsenic and other deleterious elements, reduced mine-site capital requirements, and a simpler permitting path by moving oxidation off-site. Taken together, these findings support a business case for regional biooxidation centers that can accept a wide range of high-arsenic concentrates and convert them into gold doré under a more environmentally robust and economically attractive framework than is often available today.

Tenguel, Ecuador

The Tenguel region of Ecuador (Figure 2) sits at the center of a highly active gold district, with more than 100 underground mines each producing roughly 10 to 400 tonnes of ore per day. The ore carries attractive gold grades but also very high arsenic, which severely limits where miners can sell their concentrates. Today, an estimated 250 tonnes-per-day of arsenopyrite concentrate are exported, largely to Chinese buyers who dominate the market, pay slowly, and impose steep penalties on arsenic content, typically cutting payment by 1% for every 1% arsenic above a 10% threshold. These conditions create a strong rationale for a local processing solution at Tenguel that can safely treat high-arsenic material while offering miners more competitive, transparent terms.

Figure 2
PROJECT LOCATION (TENGUEL, ECUADOR)



Source: BacTech Environmental Corporation and Tenguel Parish.

Mineral Tenure, Surface Rights, and Fiscal Regime

The Tenguel project is structured as a central processing hub rather than a traditional mine. BacTech does not hold mining concessions in Ecuador; instead, it plans to treat concentrates purchased from licensed operators in the Ponce Enríquez district. The Company has secured surface rights through a formal agreement over the La Ginita property, which covers approximately 39.25 hectares (100 acres) and has been deemed suitable to host the processing plant and associated infrastructure. Licensed miners supplying concentrate are subject to Ecuador's mining fiscal regime, which includes a 25% corporate income tax, labor profit-sharing, value-added tax, municipal and social-security contributions, and a sliding royalty of 5% to 8% of gross sales for gold, silver, and copper. The Company states that the La Ginita site formally closed in September 2022 and includes a commercial cocoa plantation. BacTech notes that Phase 1 is expected to use only about 20 acres initially, allowing existing cocoa workers to continue harvesting for their own account, with the intention that workers transition into roles at the expanded facility once Phase 2 is undertaken.

Metallurgical Testwork and Flowsheet Basis

The Tenguel flowsheet is supported by a series of metallurgical programs completed after BacTech identified concentrate sources in the Ponce Enríquez district. Beginning in 2019, testwork was carried out at ActLabs in Falconbridge, Ontario, and at ALS laboratories in Perth, Australia. These independent programs evaluated bacterial oxidation, neutralization, and downstream cyanidation on representative high-arsenic concentrates and confirmed that bioleaching could consistently achieve high gold and silver recoveries while stabilizing arsenic in a ferric arsenate residue.

Consistent with this, BacTech also characterizes ferric arsenate as a stable, landfill-disposable form of arsenic (supported by TCLP-style leach testing referenced in its technical disclosures). Results from these campaigns were used to define the process design, establish key operating parameters, and support the conceptual and feasibility-level engineering that underpins the Tenguel project.

Independent Metallurgical Test Work on Ecuadorian Concentrates (ALS Perth, 2021)

To validate the suitability of Ecuadorian refractory gold concentrates for BacTech's planned 50 tonnes-per-day biooxidation plant near Ponce Enríquez, BacTech commissioned an independent metallurgical program at ALS Laboratories in Perth, Australia. The study evaluated two representative concentrate types and a blend, all characterized by very high sulphide contents, elevated arsenic (12.9-16.7%) and iron (34-38%), and relatively low siliceous gangue. This mineralogy mirrors the high-arsenic gold concentrates currently exported from Ecuador to offshore roasters and therefore serves as a realistic template for future plant feed.

Diagnostic leach tests showed that a significant portion of the gold in these concentrates is already **cyanidable** (roughly one-third to one-half of the total), with only a negligible fraction (<1%) locked in silicates. The balance is associated with arsenopyrite and, to a lesser extent, pyrite, meaning that high overall sulphide oxidation is required to maximize recovery but that, in principle, nearly all of the contained gold can be liberated with effective biooxidation pre-treatment. The work also highlighted that concentrates previously subjected to on-site cyanidation (sample 01+03) show slower biooxidation rates, even after caustic washing, underscoring BacTech's decision to focus on fresh flotation concentrates rather than cyanide residues as long-term feed.

Using an adapted mesophilic bacterial culture in fed-batch tests designed to simulate continuous plant conditions in a laboratory setting, ALS achieved very high oxidation levels across all feed types: 94-99% arsenic oxidation, 96-98% sulphide oxidation, and mass losses of roughly 42-54%, consistent with the high sulphide tenor of the concentrates. These results are in line with operating parameters from existing commercial biooxidation plants with about six days of residence time and confirm that high-arsenic Ecuadorian concentrates are technically amenable to BacTech's biooxidation process, albeit at somewhat lower pulp densities to keep dissolved iron plus arsenic below ~50 g/L in solution.

Cyanidation of the oxidized residues delivered consistently high precious-metal recoveries, with gold extraction of 95.5-96.4% and silver recovery in the 71-89% range, and most of the leaching completed within 6-12 hours of a 48-hour test. Cyanide consumption ranged from approximately 4.7 to 5.8 kg/t of feed and lime usage from about 1.6 to 6.4 kg/t, figures that ALS and BacTech view as a baseline for further optimization during detailed engineering.

The study also examined neutralization and environmental performance. Neutralizing biooxidation **liquors** with either limestone or lime reduced soluble arsenic to below 0.5 mg/L and left very low residual iron producing effluents suitable for reuse as process make-up water. Limestone addition requirements were relatively high (roughly 0.9-1.0 t/t of feed) given the sulphide richness of the concentrates and the laboratory directive of the work, while lime reduced reagent usage by about 30%, and the choice between the two is left to cost-benefit analysis. Importantly, the resulting ferric-arsenate precipitates passed U.S. EPA TCLP leach tests, confirming that arsenic is locked in a highly stable form consistent with BacTech's focus on long-term environmental stewardship.

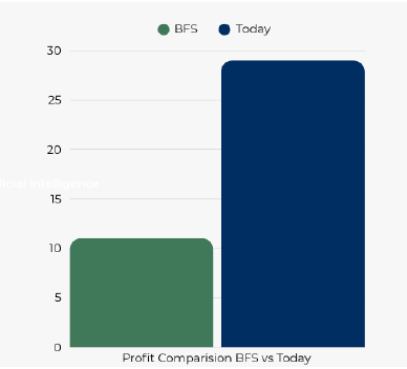
ALS concluded that these test results support the technical viability of BacTech's planned 50 tonnes-per-day facility as both a stand-alone operation and a steppingstone to a larger plant. The work reinforces several design and marketing principles: prioritize non-cyanided flotation concentrates as feed; design the biooxidation circuit around high-arsenic, high-sulphide material at moderate pulp densities; and leverage the plant as a platform to refine reagent consumption, confirm design envelopes for varied feedstocks, and generate operating data to underpin future expansions.

Phase 1: 50 Tonnes-per-day Bioleach Plant

Phase 1 at Tenguel is planned as a 50 tonnes-per-day bioleach plant supported by an independent bankable feasibility study (see "Feasibility Study Highlights" below). The original Bankable Feasibility Study (BFS-II) estimated a Phase 1 capital estimate at approximately $17 million. A 2024 construction cost update prepared by SEDEMI (an Ecuadorian engineering and construction contractor) estimates ~$18.9 million in direct plant costs. Management currently uses ~$22 million as a working Phase 1 build cost for planning, reflecting the likelihood of additional scope, indirects, and owner's costs as the budget is finalized.

On the updated case, the Company models annual production of roughly 35,000 ounces of gold, representing about $133 million in gross metal value at current prices. Assuming concentrate purchases at approximately 75% of contained gold value and operating costs of roughly $215 per tonne, management estimates annual profit of roughly $29 million (Figure 3). The economics are further supported by a 12-year tax holiday under Ecuador's Investment Protection Agreement regime, which is expected to enhance projected free cash flow.

Figure 3
TODAY $3800 GOLD = $29M PROFIT
CALCULATED AS FOLLOWS:



Source: BacTech Environmental Corporation.

Feasibility Study Highlights

In January 2022, EPCM Consultores S.R.L. completed an independent feasibility study for BacTech's Ponce Enríquez project based on conceptual engineering and metallurgical testwork completed at ALS (Perth) and ActLabs (Falconbridge). The study supports a flowsheet incorporating a light re-grind, biooxidation, neutralization, and cyanidation for arsenic-rich gold and silver concentrates, producing doré and a filtered dry-stack tailings product.

A February 2022 updated Bankable Feasibility Study contemplates a 50 tonne-per-day plant processing approximately 18,250 tonnes of dry concentrate per year over a 20-year operating life. At an average feed grade of 55 g/t gold, the study estimates annual production of about 30,900 ounces at average gold recovery of roughly 96%. Using $1,600/oz gold and $18/oz silver at the time of the study , it reports a pre-tax NPV (5%) of ~$60.7 million and a pre-tax IRR of ~57.9%, with estimated capex of ~$17 million and operating costs of ~$212 per tonne. Payback is estimated at roughly two to two-and-a-half years from the start of production, with project value most sensitive to head grade and metal prices.

SEDEMI Construction Cost Update (2024)

In August 2024, BacTech received a detailed capital cost report from SEDEMI for construction of the 50 tonne-per-day Tenguel bioleach plant, current as of July 11, 2024. The estimate covers direct plant costs and excludes contractor indirects, margin, and VAT. SEDEMI's direct-cost estimate totals ~$18.9 million and includes a 12% contingency. The report notes that certain design changes and unquoted items could increase final direct costs as scope is completed and the overall project budget is finalized.

Site Conditions, Infrastructure, and Water Management

The plant is planned for the La Ginita property (approximately 39 hectares), about 60 km northeast of Machala and roughly 140-150 km by road from Guayaquil. The site benefits from road access, nearby grid power, local water sources, and telecommunications coverage, and is located in a high-seismicity region consistent with Ecuador's coastal geology. The plan contemplates recycling and storage of process water on-site and filtered tailings placement in an engineered dry-stack facility.

In terms of the permitting progress, BacTech reports receiving ESIA approval from Ecuador's Ministry of Environment, Water, and Ecological Transition on October 3, 2022, following a process it characterized as taking roughly seven months. The Company also reports that it was granted a Consultation Permit in November 2023 after community engagement efforts, and that the project received 100% local support in that consultation process

Phase 2 Expansion: Capacity and Financial Outlook

Phase 2 is designed to add approximately 200 tonnes-per-day of capacity, taking combined throughput to around 250 tonnes-per-day. Management estimates total capital across Phase 1 and Phase 2 of approximately $100 million and expects the combined operation to lift annual gold production to roughly 125,000 ounces, depending on feed grade and availability. Under an assumed $3,800/oz gold price, Company modelling indicates substantial gross revenue, with concentrate purchases and operating costs broadly consistent with Phase 1 assumptions. Management expects the modular design to allow the original 50 tonne-per-day train to remain in production during expansion.

Tenguel Gold Price Sensitivity Analysis

A sensitivity analysis of the Tenguel project conducted by BacTech, as shown in Figure 4, highlights the substantial leverage of BacTech's financial performance to the price of gold across both operational phases. The data demonstrate a strong positive correlation between gold prices and profitability for the combined Phase 1 and Phase 2 operations described above. At a conservative gold price of $2,750 per ounce, the combined phases are projected to generate approximately $359.5 million in revenue and $75.6 million in profit. As the gold price assumption rises to $3,500 per ounce, combined revenue increases to about $513 million with profits surpassing the $100 million mark ($101.4 million). In a robust market scenario with gold at $4,000 per ounce, the project's total revenue is estimated to reach roughly $615.2 million, delivering a profit of about $118.5 million. This analysis underscores the project's ability to deliver increasing shareholder value in a rising gold-price environment.

Figure 4
TENGUEL GOLD PRICE SENSITIVITY ANALYSIS

Price	Phase 1 Revenue	Phase 1 Profit	Phase 2 Revenue	Phase 2 Profit	Phase 1 + 2 Revenue	Phase 1 + 2 Profit
$2,750	124.8	19.5	234.7	56.1	359.5	75.6
$3,000	143.1	21.9	267.5	62.2	410.6	84.1
$3,250	161.5	24.4	300.3	68.4	461.8	92.8
$3,500	179.8	26.8	333.2	74.6	513	101.4
$3.750	198.2	29.2	365.9	80.7	564.1	109.9
$4,000	216.5	31.6	398.7	86.9	615.2	118.5

Source: BacTech Environmental Corporation.

Sustainable Bond Framework and Moody's Second-Party Opinion

In July 2023, BacTech adopted a Sustainable Bond Framework intended to support financing for the Tenguel project and related environmental and social programs. Moody's issued a Second-Party Opinion, assigning an SQS2 ("Very Good") sustainability quality score and concluding that the framework is aligned with ICMA's **Green Bond** Principles (2021) and Social Bond Principles (2023). The framework includes two green categories (pollution prevention and control; sustainable water and wastewater management) and two social categories (socioeconomic advancement and empowerment; generation of decent and inclusive employment).

Moody's views the framework as targeting highly material environmental risks in gold mining, particularly acid mine drainage and arsenic management. Eligible uses of proceeds include construction and monitoring of the planned 50 tonnes-per-day bioleaching plant at Tenguel, including systems designed to stabilize arsenic as ferric arsenate, along with gold-room fume extraction and scrubbing and other pollution-control measures. On water, Moody's notes management's expectation that the process will use less water than conventional CIP/CIL routes (approximately 6 m^3 of water per ounce of gold produced, versus ~10-20 m^3/oz for conventional routes), with a target to recycle about 60% of process water and treat remaining wastewater prior to discharge. Moody's characterizes the environmental impact as significant, while noting that the plant is expected to draw power from Ecuador's grid and that cyanide remains part of the flowsheet, though it is managed under the International Cyanide Management Code and supported by high cyanide recovery in the Merrill-Crowe circuit. It should also be noted that BacTech has publicly stated that it will not purchase any concentrates that have been pretreated with mercury or cyanide.

The social component is focused on distributing project benefits locally. Eligible uses include purchasing high-arsenic concentrates from small-scale miners on more transparent terms, programs supporting local farmers and small enterprises, and initiatives aimed at decent and inclusive employment such as local hiring, health and safety investments, and a women-in-mining program. Moody's considers these social categories relevant, but describes the magnitude as moderate, citing broad target definitions and the timing of some benefits during the construction phase. Even so, Moody's concludes that the social categories contribute positively to BacTech's overall sustainability profile.

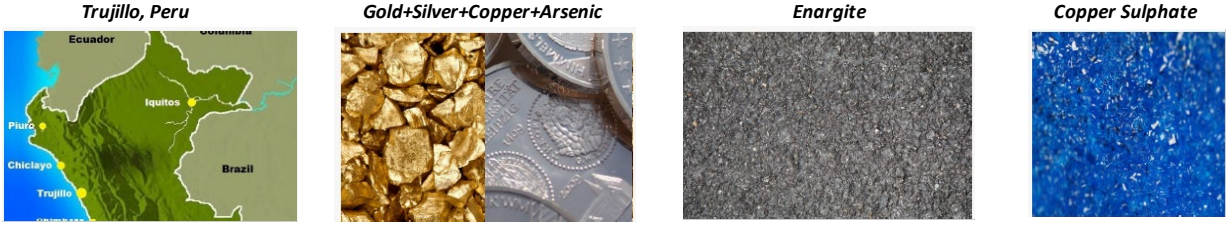
Moody's also highlights governance and reporting commitments that underpin the framework. BacTech has established a Sustainable Finance Committee spanning sustainability, accounting, treasury, engineering, and operations to evaluate eligible projects, track allocations, and monitor compliance. The Company commits to allocate proceeds within 12 months where feasible, publish annual allocation and impact reporting while the bonds are outstanding, and obtain independent third-party verification of allocation and performance until full allocation or in the event of material changes. Overall, Moody's concludes that the framework represents a meaningful contribution to sustainability with no negative adjustments for ESG risk management or coherence.

Peru Opportunity

In Peru, BacTech is targeting enargite (Figure 5), a sulphide mineral that occurs widely in northern deposits and typically contains a mix of gold, silver, copper, and arsenic. Ore from these operations is trucked to toll processors in the coastal port city of Trujillo, where there are roughly 28 known processing facilities. BacTech is in the process of building a database on these plants, including current throughput volumes and the prices being paid by Chinese buyers, to better quantify the scale and economics of the opportunity. A key part of the concept is the ability to generate additional value by producing an intermediate copper product for sale, while treating complex, arsenic-bearing feed without requiring the processors to produce separate concentrates.

Figure 5

PERU OPPORTUNITY: ENARGITE ORE, CONTAINED METALS, TRUJILLO HUB, AND COPPER SULPHATE



Source: BacTech Environmental Corporation.

ZERO TAILINGS™ TECHNOLOGY: CONVERTING SULPHIDE WASTE INTO VALUE

Most mine sites leave behind large volumes of tailings and acidic iron-rich process streams that must be neutralized, stored, and monitored for decades. These residues tie up land, generate ongoing water-treatment costs, and carry long-term environmental and regulatory risk. Yet they still contain iron, sulphur, and residual metals that conventional technologies either cannot recover economically or simply leave behind, with **acid mine drainage** from historic tailings remaining an unresolved liability in many districts. BacTech's Zero Tailings™ initiative is designed around a simple question: what if mine waste no longer had to be waste at all, but could instead be converted into a suite of useful products and revenue-generating assets?

BacTech is solidifying its commitment to sustainable mining practices with its "Zero Tailings™" initiative, for which a global patent was filed in April 2025 (described on page 7). This innovative approach provides a sustainable solution for mine tailings by employing bioleaching technology to eliminate toxic waste, thereby significantly reducing environmental liability. Beyond remediation, the process drives economic value by converting waste tailings into saleable products, including magnetite, fertilizer, base metals, and gold (shown in Figure 6). This strategy effectively creates new revenue streams while strictly aligning with Environmental, Social, and Governance (ESG) criteria, circular economy frameworks, and green mining principles.

Figure 6
ZERO TAILINGS: CONVERTING TAILINGS INTO SALEABLE PRODUCTS

Tailings Ground : Shows texture of mine

Yellow Mineral Structure: illustrates the bioleaching technology in action

Pellets : Granular material, showing conversion of waste into saleable products.

Doré bar.

Source: BacTech Environmental Corporation.

BacTech's Zero Tailings™ technology is designed to treat sulphide-rich wastes that still contain minerals, such as pyrite, pyrrhotite, chalcopyrite, and sphalerite containing residual metal values. The core of the process is the clean, economic separation of iron from sulphur so that both components can be repurposed into useful products while valuable metals are selectively recovered. In operation, iron in the waste stream is converted into magnetite or hematite, which can be sold as feedstock for ironmaking or into the pigment industry, while the sulphur is converted into ammonium sulphate fertilizer. This approach turns what would otherwise be long-term environmental liabilities into saleable iron and fertilizer products.

The commercial logic of Zero Tailings™ is to turn waste into products and products into profits that effectively fund cleanup. By converting iron-sulphur tailings into magnetite, a feedstock for steelmaking and pigments, and ammonium sulphate, a widely used fertilizer, the process creates new cash flow from materials that previously carried only cost and liability. That revenue can then support the recovery of residual metals such as copper, cobalt, nickel, and gold that were sub-economic to extract in the primary flowsheet. Because ammonia chemistry is well proven in the metals refining industry and suited to selective metal recovery, BacTech envisions a circular model in which waste becomes products, products pay for remediation, and remediation releases further value in the form of recovered metals and reclaimed land. In effect, an environmental cost is reframed as an economic opportunity.

At the same time, the technology allows for the recovery of a broad suite of metals in marketable form, including nickel, cobalt, copper, zinc, gold, silver, platinum-group metals, and potentially rare earths. It is intended to work on waste from past, present, and future mining operations, using conventional, low-maintenance equipment that can be deployed at different scales to suit specific sites and applications. An additional benefit of the flowsheet is the production of high-quality water that can be reused in processing or discharged in compliance with regulatory standards. Taken together, these features position BacTech's technology as a practical way to extract residual value from sulphide wastes while reducing environmental impacts associated with legacy and ongoing mining.

Process Innovation: Separating Iron and Sulfur into Saleable Products

The core innovation behind Zero Tailings™ is the way BacTech separates iron and sulfur from sulphide minerals and converts both into marketable products while keeping valuable metals in solution. In the first step, bioleaching converts pyritic and related sulphide minerals into soluble iron and sulphuric acid. The resulting liquor then enters an ammonia-based circuit that reacts the soluble iron to form magnetite (or, in some cases, hematite) and converts the sulphuric acid into ammonium sulphate fertilizer. During this sequence, metals such as nickel and cobalt largely remain in solution rather than precipitating with the iron or fertilizer, typically as ammine complexes. After the magnetite is filtered off as a solid product, the remaining solution contains dissolved ammonium sulphate and the soluble metals, which can then be selectively recovered as separate precipitates (as practiced in the Sherritt Gordon process). Once metals are removed, the ammonium sulphate solution can be crystallized by evaporation and sold as a granular fertilizer. This final step is used in the Sherritt Gordon process, but Sherritt Gordon cannot produce a separate iron product under BacTech's current innovation. It also does not enable recovery of other valuable metals or elements.

Management emphasizes that the same chemistry can be applied to any process liquor that contains dissolved iron and acid, including streams produced by bioleaching, other conventional leaching processes, such as pressure oxidation ("POX") or acid mine drainage. The technology therefore has potential application beyond BacTech's own projects wherever sulphide oxidation generates iron- and acid-rich solutions that require treatment.

Feed Scale, Concentrate Throughput, and Capital Intensity

BacTech's Zero Tailings™ concept is designed around biooxidation, a mature alternative to pressure leaching for sulphide feeds. Management notes that the often-quoted 300 tonnes-per-day design capacity refers to sulphide concentrate, not run-of-mine ore or full waste tonnage. In a typical application, classification and upgrading steps first convert approximately 3,000 tonnes-per-day of waste into about 300 tonnes-per-day of low-grade sulphide concentrate suitable for bioleaching. As a result, capital and operating costs should be assessed on a per-tonne-of-waste basis that is closer to one-tenth of the apparent cost implied by the 300 tonnes-per-day figure. This distinction is important when comparing the Zero Tailings™ flowsheet with conventional waste management, since the reactors are sized to treat a relatively small, upgraded sulphide stream rather than the total waste volume.

Scope of Application and Mineralogical Constraints

The Zero Tailings™ flowsheet is not intended as a universal solution for all deposits or commodity types. Its sweet spot is waste and process streams derived from sulphide mineralization, particularly where pyrite, pyrrhotite, chalcopyrite, or related minerals generate iron- and acid-rich liquors. In these cases, the technology can address both environmental management and metal recovery by converting soluble iron and acid into magnetite and ammonium sulphate while recovering associated metals. Rare earth or uranium projects that do not involve significant iron or include acid generation or acid addition during the process are less likely to be direct candidates. BacTech positions Zero Tailings™ as a flexible platform for any operation that must manage iron-bearing acidic solutions, whether generated by bioleaching, conventional leaching, or acid mine drainage, rather than as a one-size-fits-all solution across the entire mining industry.

Illustrative Case Study: Cobalt-Bearing Tailings

BacTech's Zero Tailings™ concept can be applied to cobalt-bearing sulphide tailings where cobalt is hosted primarily in pyrite, with residual copper in chalcopyrite/bornite and minor precious metals that can be hard to recover through conventional routes. In the case study, BacTech uses stirred-tank bioleaching to oxidize sulphide minerals over roughly a 5-6 day residence time, liberating cobalt and other payable metals into solution, while converting iron and sulphur released during leaching into saleable by-products such as magnetite and ammonium sulphate. The remaining silicate-rich material is positioned for reuse (for example, construction products, backfill, or landscaping), with process water continuously recycled in a closed-loop system, reducing water demand and long-term tailings liabilities.

The study also frames Zero Tailings™ as modular and retrofit-friendly, functioning as a downstream "safety net" to capture metal value that current flotation operations may leave behind, while managing ore feed variability through acting as a secondary process after flotation for by-product revenue (higher sulphur supporting fertilizer output; higher iron supporting magnetite production). On illustrative assumptions for a representative stream, BacTech estimates total revenue of about $115 per tonne processed (roughly $38/tonnes from metals and $77/tonnes from by-products), translating to approximately $40 million per year at 1,000 tonnes-per-day. Management's example economics show staged scale-up potential, with an indicated 15-year NPV/IRR (at an 8% discount rate) of roughly $500 million / ~40% for a staged build and ~$750 million / ~70% for a direct larger build, with operating costs driven mainly by ammonia reagent and aeration power.

Advantages and Retrofit Potential

Zero Tailings™ is conceived as a modular, bolt-on concept rather than a stand-alone greenfield plant. The process can be integrated into existing operations as a "polishing" step to capture the last 5%-10% of metal value that conventional recovery circuits miss and to treat acidic iron streams before discharge. It can also be deployed at legacy tailings storage facilities and acid mine drainage sites to unlock remaining metals and reduce long-term environmental liabilities. In each case, the intention is the same: to convert what is currently classified as a liability into an income-producing asset, while lowering closure risk and creating options for eventual land reclamation and reuse.

Zero Tailings™: Economics, Reagent Strategy, and Scalability

BacTech's Zero Tailings™ technology combines a clear technical foundation with a distinct economic and scalability profile. At its core, the process achieves a clean and efficient separation of iron from sulphur in iron sulphide wastes that still contain residual valuable metals. It can treat common sulphide mineralization such as pyrite, pyrrhotite, chalcopyrite, and sphalerite, then repurpose both the iron and sulphur into useful industrial products while selectively recovering payable metals. The principal commercial outputs are ammonium sulphate fertilizer and iron oxides such as magnetite or hematite, which can be sold as feedstocks into iron-making and pigment markets.

A key point of differentiation for Zero Tailings™ is the use of ammonia rather than lime or limestone as the primary neutralizing reagent. On a simple price basis, ammonia appears more expensive, with current prices around $500 per tonne compared with roughly $30 per tonne for limestone. However, management's internal engineering work indicates that the comparison must be made on both reagent consumption and product outcomes.

Considering per tonne of pyrite present as waste, neutralization with limestone requires about 2 tonnes of reagent, which requires grinding and maintaining as a circulating slurry, generating approximately 1 tonne of ferric hydroxide and 3 tonnes of gypsum waste. This waste package creates an estimated 12 m^3 of sludge, locks up around 8 tonnes of water, releases roughly 1 tonne of CO_2, and leaves associated metals permanently trapped in a low-value residue that must be monitored and contained indefinitely at a perpetual cost.

By contrast, management's calculations suggest that the Zero Tailings™ route would consume roughly 0.5 tonne of ammonia for the same pyrite content, producing around 700 kilograms of high-purity magnetite with an indicative value of about $75 and approximately 2.25 tonnes of ammonium sulphate fertilizer worth around $250. No ferric hydroxide or gypsum sludge is produced, no CO_2 is released from reagent use, and there is no requirement for a conventional tailings impoundment dedicated to these residues. On this basis, management estimates that reagent expenditure of about $250 per tonne of pyrite could be offset by roughly $325 in product revenue, yielding a reagent-level margin of about $75 before accounting for recovered metals such as nickel and cobalt, which are estimated to add a further $50-$200 per tonne of pyrite depending on grade.

These product streams underpin the economics of a modular plant design that can be expanded over time, allowing operators to increase throughput in stages and align capital spending with project growth. Management expects returns not only from the sale of fertilizer, iron products, and recovered metals, but also from reduced tailings dam construction and monitoring costs, lower rehabilitation bonding requirements, and the ability to add value at closed mines, care-and-maintenance sites, and operating mines by turning historic and current waste into revenue-generating feed. Importantly land value is created for re-purposing which historically has often been a key driver for tailings remediation projects.

When incorporated at the project-planning stage, the technology can effectively convert waste into value, supporting lower cut-off grades and larger reportable resource tonnages. Because it focuses on waste reduction, fertilizer and iron production, and permanent cleanup of legacy tailings, the approach is naturally aligned with green financing and government remediation programs and may help foster new strategic iron and fertilizer industries in countries that currently depend on imports yet carry a substantial legacy of mining waste.

BacTech's cost modelling currently uses prevailing prices for conventional ammonia. The broader shift toward low-carbon or "green" ammonia production using renewable power may support long-term reagent security at competitive price levels by the time Zero Tailings™ reaches commercial scale. Ammonia is already shipped in large seaborne cargoes, and future green ammonia is emerging as a low-carbon fuel and process reagent for mining and metallurgical operations. It can replace diesel for on-site power and mobile equipment, act as a hydrogen carrier for high temperature processes, and serve as a selective reagent in hydrometallurgical circuits. Its ability to reduce emissions while supporting efficient metal recovery makes ammonia a key enabler of decarbonized, next-generation mineral processing.

Production is expected to be co-located with solar and wind resources, many of which are near remote mining districts. BacTech believes that reagent logistics and pricing are unlikely to be a structural barrier to deploying the technology, particularly where conventional neutralization already represents a major component of operating costs and long-term liabilities.

Carbon Credit Opportunities: Bioleaching vs. Roasting/Smelting

BacTech's Zero Tailings™ process treats iron sulphide waste streams, such as pyrite, pyrrhotite, chalcopyrite, and sphalerite that still contain payable metals. Using a water-based, moderate-temperature bioleach, the technology oxidizes iron sulphides and cleanly separates iron from sulphur, liberating associated base and precious metals and neutralizing acid-forming components. The resulting streams are then upgraded into saleable products, including high-purity magnetite or hematite feedstock for iron and pigment markets and ammonium sulphate fertilizer, converting long-lived environmental liabilities into multiple revenue-generating outputs.

Compared with conventional roasting and smelting, Company estimates indicate that this hydrometallurgical route operates at roughly 50°C and would generate minimal CO_2 per tonne of concentrate processed, versus approximately 1.8 to 2.5 tonnes of CO_2 for high-temperature thermal decomposition processes that run at 600°C or higher. Traditional roasting not only consumes more energy, it also produces sulphur dioxide gas and unstable arsenic trioxide, which require extensive off-gas capture and disposal systems and are increasingly subject to regulatory and fiscal penalties, including the 13% Chinese import tax on high-arsenic gold concentrates.

By contrast, BacTech's bioleaching uses biological oxidation in aqueous media to convert arsenic into stable ferric arsenate, a non-leachable solid suitable for safe disposal, while eliminating toxic gas emissions altogether. This combination of lower greenhouse-gas intensity and permanent arsenic stabilization should materially improve the ESG profile of host projects and, in supportive jurisdictions, could create additional upside through eligibility for low-carbon incentives or carbon-credit programs.

Metal Recovery and "Zero Waste" Design

The Zero Tailings™ flowsheet is engineered to minimize metal losses and solid waste generation. In BacTech's design, all solid phases are intended to leave the circuit as saleable products: magnetite or hematite as iron feedstock, ammonium sulphate crystals as fertilizer, and an inert silicate fraction that can be used in backfill, landscaping, road base, or other construction applications. Process water is treated to a quality suitable for reuse or discharge, reducing the need for freshwater make-up.

While no industrial system can achieve 100% recovery, the process is designed as a closed loop in which internal recycling captures low-level metal loads as they build up in recirculating streams. BacTech's target is that valuable metals associated with pyrite and other sulphides are effectively fully recovered over time, with cross-contamination of end products held to very low levels (management states that its internal target is roughly 0.01%). The goal is to replace conventional neutralization and sludge disposal, which permanently lock metals into low-value waste, with a flowsheet that converts those same elements into a combination of saleable metals, fertilizers, and industrial minerals.

Waste Streams, Silicates, and By-Product Logistics

Critiques of the Zero Tailings™ concept have correctly noted that no industrial process is entirely free of residual solids. BacTech acknowledges that some silicate and gangue minerals will report to a separate inert fraction. However, the Company's design intention is that this material will be de-watered and repurposed locally as aggregate for backfill, site reclamation, or basic construction, rather than stored as high-moisture sludge in a tailings pond. In other words, while small volumes of low-value solids remain, the process aims to avoid the large, water-rich sludge streams characteristic of lime-based neutralization.

Logistics will remain site-specific. For remote operations, BacTech does not assume that low-value aggregates or silicate products would be shipped over long distances to urban markets. Instead, the economic case for Zero Tailings™ is driven by the combination of fertilizer, iron products, and recovered metals, alongside the avoided cost and liability of conventional tailings storage and water treatment. Management estimates that magnetite alone could account for roughly a quarter of project revenue in some applications, with potential upside where pigment-grade material can be produced. The key revenue driver is typically ammonium sulphate which accounts for half of project revenue in some applications where only very low levels of residual metals are available for recovery.

Growth Strategy/Zero Tailings™ Commercialization

BacTech has been commercializing biotechnology in mining for more than 30 years, taking bioleach processes from bench scale to full-scale plants on three continents. The Zero Tailings™ flowsheet draws on that experience but is still at an early process-development stage, and management expects scale-up to occur through partnerships. The Company is actively seeking collaborations with mining companies, engineering firms, and investors to test and deploy the technology at operating and legacy sites. Given its track record in bioleaching, BacTech views Zero Tailings™ as commercially realistic rather than purely conceptual, with the potential to create shared value for governments, regulators, communities, mine operators, and shareholders through a combination of economic returns, ESG improvement, and reputational benefits for early adopters.

Tailings as the Next Ore Body

Underlying BacTech's strategy is a simple philosophy: the metals needed for the energy transition are often already at surface, locked in tailings and waste rock rather than deep underground. In this view, tailings are the next ore body. The Company's long-term vision is a mining industry in which legacy tailings dams and acidic waste streams are progressively reclassified as feedstock for green processing technologies such as Zero Tailings™, reducing the need for new disturbance while cleaning up historical sites. Rather than treating waste management as a sunk cost, BacTech aims to make it a source of metal supply, fertilizer, iron products, and reclaimed land.

Sudbury, Ontario

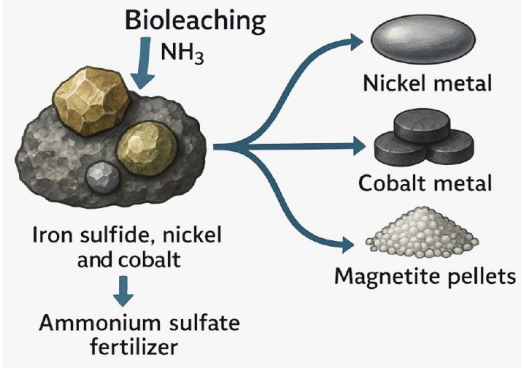
BacTech's near-term development plan is closely tied to a flagship opportunity in the Sudbury Basin (Ontario), where management has identified roughly 100 million tonnes of pyrrhotite tailings as a potential long-term feedstock. This waste material contains about 1% valuable base metals, including approximately 0.8% nickel, 0.2% copper, and 0.03% cobalt, which the Company estimates represents a gross in situ metal value of roughly $22 billion. Through BacTech's bioleaching and separation process, this "waste" could be converted into multiple revenue streams by recovering nickel, copper, and cobalt for the critical metals market while transforming the remaining iron and sulphur into saleable magnetite/hematite and ammonium sulphate fertilizer.

To advance this opportunity and de-risk the flowsheet, the Company plans to continue pilot-scale testing at MIRARCO in Sudbury and use the resulting data to develop a detailed process flow sheet. The next steps include completing the engineering design for a demonstration plant, then building and operating the demo facility to confirm scalability under near-commercial conditions. Management notes that scale-up risk is mitigated by combining BacTech's bioleach circuit with conventional downstream equipment already proven in industry. Assuming successful demonstration, the Company intends to commercialize the technology through global or regional licensing, targeting upfront fees, and life-of-project royalties, with speed of execution viewed as critical in capturing early projects, such as Sudbury's legacy pyrrhotite tailings.

Illustrative Flowsheet for Nickeliferous Pyrrhotite Tailings

A simplified process schematic (Figure 7) illustrates how the Zero Tailings™ flowsheet would treat nickeliferous pyrrhotite tailings, such as those found in the Sudbury Basin. In this concept, iron sulphide tailings containing nickel and cobalt are fed into a bioleaching circuit, where specialized bacteria oxidize the sulphides and make the metals soluble. The leach liquor is then processed through ammonia contacting under proprietary conditions followed by conventional downstream recovery steps to produce separate saleable products. For the critical elements such as cobalt and nickel these may be either as metals or intermediate precipitates., The iron is transformed into magnetite pellets suitable for iron and steel applications, and sulphur transformed into ammonium sulphate fertilizer rather than emitted as gas as would occur in roasting.

Figure 7
ZERO TAILINGS™ PROCESS
Concept example for treating Nickeliferrous Pyrrhotite Tails



Source: BacTech Environmental Corporation.

On this foundation, BacTech presents a strong investment case built around modular scalability and alignment with global green-financing trends. The Zero Tailings™ plant can be deployed in modular units, allowing throughput to be expanded in stages and capital to be committed incrementally, which lowers upfront investment risk and allows technology upgrades to be added as the throughput is scaled up over time using expansions.

Returns are expected to come from several sources: direct revenue from recovered metals and by-products, substantial savings on tailings-dam construction and monitoring, and reduced rehabilitation bonding requirements. By converting sulphide waste into saleable products, the approach can enhance project economics for new mines by lowering metal cut-off grades and can also revive closed or care-and-maintenance sites by turning waste liabilities into assets. A single plant may also treat a blend of tails from an existing operation with tails sourced from a nearby legacy tails site. In jurisdictions that currently rely on imported iron and fertilizer, local production of these strategic commodities further supports resource independence, while the strong environmental profile of the process positions BacTech as a natural candidate for government remediation programs and green-financing initiatives.

Strategic Partnerships and Government Support

BacTech is advancing its Sudbury Zero Tailings™ initiative through applied research partnerships, most notably with MIRARCO Mining Innovation in Sudbury. MIRARCO's pilot-scale facilities support continuous testing of BacTech's bioleach flowsheet, generating practical design data on metallurgical performance, reagent consumption, and operating conditions. This work helps translate laboratory results into operating parameters suitable for a larger demonstration-scale program and provides valuable third-party validation in an independent research setting.

BacTech's R&D has also been supported by Ontario innovation programs and government grant funding, including programs historically administered by the Ontario Centres of Excellence (now operating as the Ontario Centre of Innovation). In addition to providing non-dilutive funding for test work, this support offers external technical scrutiny that strengthens the credibility of BacTech's development efforts in complex concentrates and tailings processing.

Milestones and Strategic Catalysts

The milestones below summarize the key operational and strategic steps BacTech expects to execute as it advances its near-term priorities and develops longer-term growth initiatives. They highlight the primary catalysts that could influence the Company's timeline, risk profile, and potential value creation over the next several years.

Near-term (next 12 months)

- Complete the financing package for the Tenguel Phase 1 plant, including the planned green/social bond and remaining tranches of the Silver Crown silver royalty, which together are intended to fund the ~$22 million capex and initial working capital.

- Advance detailed engineering and procurement for Tenguel, locking in key equipment and contractors and moving the fully permitted project toward construction readiness, building on the completed bankable feasibility study and ESIA.

- Begin construction of the 50 tonnes-per-day Tenguel bioleach facility, followed by commissioning and first gold pour, with construction currently estimated at roughly 12-14 months once fully funded.

Mid-term (roughly 12-24 months after financing)

- Complete pilot-scale test work and engineering design for a Zero Tailings™ demonstration plant in Sudbury, using MIRARCO data to support a commercial-scale flowsheet for nickel, cobalt, copper, green iron, and fertilizer production from pyrrhotite tailings.

Longer-term (24+ months)

- Construct and commission the Sudbury Zero Tailings™ demonstration plant and, if successful, pursue the first commercial license or regional partnership for the "zero-waste" flowsheet, creating a potential fee-and-royalty model on legacy tailings projects.

- Progress additional pipeline opportunities, including formalizing a development path in Peru's enargite belt (Trujillo processors) and evaluating a Phase 2 expansion at Tenguel to 250 tonnes-per-day, which would increase annual gold output and deepen leverage to the regional concentrate market.

Competition

BacTech operates in a market where most alternative processing routes remain conventional, including roasting, pressure oxidation (POX), and smelting or toll treatment of concentrates. Alongside these methods, there is one major, established biooxidation technology provider focused on the refractory-gold segment, as well as a small but growing group of "green chemistry" and tailings-valorization technologies that intersect with BacTech's themes in different ways. BacTech is one of only two companies worldwide with commercial bioleaching plants, and its strategy is to apply this experience to high-arsenic concentrates and mine waste through owned facilities and future licensing. The following section summarizes the main categories of competing technologies and profiles of selected companies that are likely to appear alongside BacTech as it advances the commercialization and licensing of its own processes.

Conventional Processing Options vs. Bioleaching

For refractory gold concentrates, the standard route has long been oxidative pre-treatment by roasting or POX, followed by conventional cyanide leaching. Roasting volatilizes arsenic and, where present, mercury, which must then be captured from off-gases and stored in forms such as arsenic trioxide that remain hazardous indefinitely. POX avoids gaseous arsenic emissions but requires high-pressure, high-temperature autoclaves, significant capital, and careful operation. In both cases, facilities are generally designed for large single-mine operations and are less suited to the distributed, small-scale concentrate production typical of districts such as Ponce Enríquez.

Smelting and toll-treatment of high-arsenic concentrates remain the main outlet for many producers. Chinese smelters, in particular, dominate this market and apply steep arsenic-related penalties, often reducing payability by 1% for every 1% arsenic above a 10% threshold, while taking months to settle payment. For miners, these terms translate into lower realized prices, slow cash conversion, and limited control over environmental outcomes associated with downstream processing. BacTech's bioleach hubs are designed to compete with these routes by offering local processing, higher payability, faster settlement, and a cleaner environmental profile, particularly on arsenic stabilization and water quality.

Other Commercial Bioleaching Providers

Commercial biooxidation is not new, and the largest incumbent in this space is Metso (through the BIOX® process it acquired via Biomin/Outotec). BIOX® has been used for more than 40 years as a pre-treatment step for refractory gold concentrates, with 10 plants commissioned worldwide and tens of millions of ounces of gold produced using the technology. BIOX® plants are typically built as part of integrated mine-site processing complexes, where a single operator treats its own concentrates in dedicated tanks ahead of cyanidation.

Against this backdrop, BacTech positions itself as one of a very small number of companies with hands-on experience in designing and operating stirred-tank bioleach circuits for gold and base metals. Historic reference plants using the BACOX® process have operated in Western Australia, Tasmania, and China, and BacTech is now shifting from a licensing model toward owner-operated plants focused on toxic concentrates and mine waste.

In practical terms, BIOX® and similar offerings are most competitive where a large, well-capitalized mine needs to treat its own **refractory ore** or concentrate on site. BacTech, by contrast, is targeting smaller, more fragmented production centers and legacy waste, using centralized hubs that receive feed from multiple operators and explicitly address arsenic, acid rock drainage, and tailings liabilities. The Company's Zero Tailings™ concept further extends beyond traditional biooxidation by looking to convert iron and sulphur into saleable products such as magnetite and ammonium sulphate fertilizer, rather than treating them solely as wastes.

Emerging "Green" Extraction and Tailings-Valorization Technologies

A small group of technology developers is working on alternative approaches to metal extraction and tailings re-use. While none currently replicates BacTech's combination of commercial bioleaching experience and integrated iron/fertilizer production from tailings, investors are likely to track these companies alongside BacTech as part of a broader move toward lower-impact extraction.

Ceibo (copper leaching, Chile)

Ceibo is a Chile-based company focused on improving the leaching of copper sulphide ores, including low-grade chalcopyrite. It promotes an innovative chemical-based leach process that can be applied to existing heap-leach operations, with claims of faster copper recovery, lower water consumption than conventional concentration, and applicability across different sulphide ores. Strategic investors such as BHP have backed Ceibo, and the company has reported producing copper cathodes from a demonstration plant at a Chilean mine.

Ceibo becomes relevant to BacTech where a project is evaluating alternatives for cleaner copper extraction from sulphide ores. However, its business model and target market differ: Ceibo focuses on heap-leach copper at large mine sites, whereas BacTech's stirred-tank bioleach systems are aimed at high-arsenic gold/copper concentrates and waste streams, often in modular hub facilities. Ceibo does not currently address gold-arsenic concentrates or create iron and fertilizer products from sulphide tailings, so the overlap is more thematic than direct.

Cycladex (cyanide-free reagents for gold/silver and lithium)

Cycladex develops cyanide-free reagents for gold and silver extraction, based on cyclodextrin-based chemistry that operates in a hydrogen-peroxide/brine system, and has also promoted applications in lithium recovery. The company's model centers on supplying proprietary reagents and process know-how to mines and processing plants that want to reduce or eliminate cyanide. Pilot and demonstration work has included partnerships with smaller gold producers and technology demonstrations in North America.

In a flowsheet that uses BacTech's biooxidation step, cyanidation remains the assumed downstream leach method. A mine considering alternatives might weigh a Cycladex-style reagent package as a substitute for cyanide, either in a conventional flowsheet or potentially downstream of a bioleach pre-treatment. In that sense, Cycladex competes more directly with cyanide than with BacTech's core biooxidation step. There is also theoretical scope for complementarity if non-cyanide **lixiviants** are paired with bioleach pre-treatment in future projects.

pH7 Technologies (solvometallurgical recovery from complex feeds)

pH7 Technologies is a Vancouver-based company that has developed a proprietary, closed-loop solvometallurgical process to recover critical and precious metals at low temperature and with reduced environmental impact. The company focuses on complex feeds, such as spent catalysts, electronic scrap, and other secondary materials, and is beginning to extend its chemistry to certain mined ores as well. pH7 has moved beyond lab-scale work into early commercial deployment, including a plant in Vancouver processing industrial residues, and has recently raised a significant Series B round to scale its technology platform.

From BacTech's perspective, pH7 is more a thematic peer than a direct competitor. Both groups are trying to extract metals from difficult feedstocks in a cleaner way, but pH7's process is a proprietary solvent system applied to relatively high-value, lower-tonnage materials, whereas BacTech is focused on bulk sulphide concentrates and mine tailings treated in stirred tanks. pH7 does not currently claim to convert tailings into iron, fertilizer, and aggregate products in the way envisioned under BacTech's Zero Tailings™ concept, so any overlap is, at this stage, indirect rather than head-to-head.

Investment Highlights

- ***Overview***. BacTech Environmental Corporation is a Canadian clean tech company focused on bioleaching high-arsenic concentrates and mine waste using its proprietary BACOX® technology. The process uses naturally occurring bacteria in atmospheric water-based circuits to oxidize sulphides, recover metals, and stabilize arsenic in a benign mineral residue. BacTech is one of two companies with commercial bioleach operations and is now shifting from licensing to building, owning, and operating its own plants.

- ***Tenguel project.*** The flagship Tenguel bioleach plant in southwest Ecuador is designed as a build-own-operate facility treating arsenic-rich gold concentrates from numerous local mines. The project is supported by a bankable feasibility study, key environmental permits, and an Investment Protection Agreement that provides tax stability, property-rights protection, and 12 years of income-tax exemption. Management positions Tenguel as South America's first commercial bioleach hub for high-arsenic concentrates and a formal alternative to exporting material to Chinese smelters.

- ***Tenguel economics***. Phase 1 at Tenguel is modeled at roughly $22 million in capex for a 50 tonne-per-day plant producing about 35,000 ounces of gold per year, which at a $3,500/oz gold price could generate more than $120 million in annual revenue and an after-tax payback of about one year. A separate case study on a 52.6 tonnes-per-day scenario at $2,600/oz suggests an NPV above $100 million and roughly $300 million in revenue from about $77 million in initial capex. A planned Phase 2 expansion to 250 tonnes-per-day is expected to lift output above 100,000 ounces per year, with combined Phase 1 and Phase 2 capex of about $100 million and more than $350 million in modeled revenue at operating costs of roughly $212 per tonne.

- ***Mature technology with independent test work***. BacTech's stirred-tank bioleaching systems have been used commercially since the mid-1990s, and prior reference plants in Australia and China have operated at 60-200 tonnes-per-day. Independent test work by ALS Metallurgy in Perth on Ecuadorian concentrates showed excellent sulphide oxidation, gold recoveries of about 95.5-96.4%, and "modest to good" silver recoveries, with neutralization tests reducing soluble arsenic below 0.5 mg/L and TCLP leach tests confirming stable ferric arsenate residues suitable for landfill disposal. These results support both the technical feasibility and environmental performance assumptions behind the Tenguel flow sheet.

- ***Zero Tailings™ and Sudbury growth leg***. In parallel with Tenguel, BacTech is advancing its Zero Tailings™ initiative in the Sudbury Basin, targeting large pyrrhotite tailings deposits for the recovery of nickel and other base metals alongside iron, fertilizer, and aggregate products. The Company has lodged a "Zero Waste" patent covering a flowsheet that converts sulphide-rich mine waste into magnetite for steel and pigments, ammonium sulphate fertilizer, and base/critical metals, with inert silicates repurposed as construction material. Management views Sudbury as the first application of a scalable platform aimed at turning legacy tailings into multi-product assets rather than perpetual liabilities. Rare earths are also amenable to bioleaching in a similar manner to the previous BacTech applications.

- ***Tailings as the next ore body***. BacTech's strategy is built on the idea that many metals needed for the energy transition already sit at surface in tailings and waste rock. Zero Tailings™ is designed to break the traditional model of tailings as a cost center by recovering magnetite, fertilizer, and residual metals while reducing long-term water treatment and storage liabilities. Over time, the Company aims to reposition historic tailings dams and acidic iron-rich streams as feedstock for "green" processing, aligning remediation with new revenue streams and reclaimed land.

- ***ESG profile, permitting, and sustainable finance.*** Tenguel is fully permitted and backed by an Investment Protection Agreement with the Government of Ecuador, while BacTech's bioleach process avoids arsenic-bearing off-gases and locks arsenic into stable ferric arsenate that meets landfill criteria. The Company's Sustainable Bond Framework, rated SQS2 "Very Good" by Moody's and aligned with ICMA Green and Social Bond Principles, is intended to fund pollution control, water management, and local socioeconomic programs.

- ***Intellectual property.*** BacTech's IP centers on its BACOX® bioleaching platform and the Zero Tailings™/"Zero Waste" patent family, which targets recovery of green iron, fertilizer, and base/critical metals from sulphide-rich tailings and acidic iron streams. The Company combines these patents with legacy process IP and proprietary know-how in reactor design, microbial management, and flowsheet optimization, which together form a meaningful technical and competitive moat.

- ***Research Partnerships and Non-Dilutive Support.*** BacTech's bioleaching R&D is supported by its partnership with MIRARCO and the Ontario Centre of Excellence, with additional Ontario government research grants providing non-dilutive funding and third-party support for advancing and validating the technology.

- ***Experienced team and strategic partnerships.*** BacTech's technical and leadership team has more than three decades of experience designing and operating bioleach plants from pilot scale to long-life commercial operations. Management includes long-tenured executives in bioleaching, project development, and finance, complemented by external experts such as MIRARCO in Sudbury, which supports pilot work on Zero Tailings™. This depth of experience and network of partners underpins the Company's plan to build and own plants like Tenguel while licensing or co-developing Zero Tailings™ projects with third parties.

- ***Replicable, modular business model.*** BacTech's projects are designed to be modular, allowing throughput and capital to be scaled in stages and enabling replication across multiple districts facing similar arsenic and tailings challenges. Tenguel serves as the initial owner-operated hub model, while Zero Tailings™ is intended to follow a licensing and royalty-driven strategy that can be adapted to different mine sites and jurisdictions. If successfully executed and financed, this combination could support a portfolio of remediation-centric assets with exposure to gold, base metals, fertilizer, and green iron products.

- ***Development-stage profile with leverage to execution and financing***. BacTech remains a pre-revenue, development-stage company, with recent financial disclosures highlighting the need for continued access to equity, strategic, and project financing as it advances Tenguel and Zero Tailings™. 2024-2025 spending has focused on IP, feasibility work, pilot programs, and small unit financings to position the business for larger project-level funding. Successful closure of Tenguel construction financing and demonstration of the Sudbury flowsheet are likely to be key inflection points for valuation and risk.

- ***Tight structure and leverage to milestones.*** BacTech has approximately 218 million shares outstanding (as of September 30, 2025), with about 17% held by insiders and >5% shareholders, resulting in a relatively tight float. Key milestones ahead include securing financing for the Tenguel Project, moving through construction to first gold pour, and advancing the Sudbury Zero Tailings™ initiative. As of September 30, 2025, the Company reported cash of roughly C$81,000 and a working capital deficit.

Historical Financial Results

Figures 8, 9, and 10 (pages 34-36) provide a summary of BacTech's most recent key financial statements for the three months ended September 30, 2025.

Figure 8
BacTech Environmental Corporation
CONDENSED INTERIM CONSOLIDATED STATEMENTS OF LOSS AND COMPREHENSIVE LOSS
Unaudited, expressed in Canadian dollars, unless otherwise stated)

	Three months ended September 30		Nine months ended September 30	
	2025	2024	2025	2024
	$	$	$	$
Expenses				
Operating and administrative costs (*note 13*)	**438,385**	247,974	**1,064,939**	1,046,719
Finance charges *(note 14)*	**51,575**	74,910	**162,790**	220,407
Project expenditures	-	20,605	**30,781**	52,508
Total expense	**489,960**	343,489	**1,258,510**	1,319,634
Net loss for the period before the undernoted	**(489,960)**	(343,489)	**(1,258,510)**	(1,319,634)
Loss from other items				
Loss from change in fair value of marketable securities	**(13,311)**	-	**(113,543)**	-
Net loss and comprehensive loss for the period	**(503,271)**	(343,489)	**(1,372,053)**	(1,319,634)
Basic and diluted loss per share *(note 12)*	**0.00**	0.00	**(0.01)**	(0.01)
Weighted average number of common shares outstanding *(note 12)*	**218,369,833**	193,035,834	**208,231,166**	193,035,834

Source: BacTech Environmental Corporation.

Figure 9
BacTech Environmental Corporation
CONDENSED INTERIM CONSOLIDATED STATEMENTS OF FINANCIAL POSITION
Unaudited, expressed in Canadian dollars, unless otherwise stated)

	As at September 30 2025	As at December 31 2024
	$	$
Assets		
Current assets		
Cash	**81,272**	5,361
Sales taxes receivable	**21,567**	7,036
Investments, marketable securities *(note 22)*	**624,375**	755,000
Prepaids and deposits	**39,777**	17,010
Total current assets	**766,991**	784,407
Non-Current assets		
Land *(note 15)*	**980,564**	980,564
Guarantee and other deposits	**97,792**	101,080
Total non-current assets	**1,078,356**	1,081,644
Total assets	**1,845,347**	1,866,051
Liabilities		
Current liabilities		
Accounts payable and accrued liabilities *(notes 6 and 7)*	**2,998,019**	3,017,447
Government assistance *(note 20)*	**60,000**	60,000
Payable to Aquila Resources Inc. *(note 5)*	**161,294**	161,294
Debentures *(note 8a)*	**100,000**	100,000
Convertible debentures (*note 8b*)	**1,400,000**	1,275,857
Total current liabilities	**4,719,313**	4,614,598
Liabilities related to abandoned subsidiary *(note 19)*	**180,647**	180,647
Total liabilities	**4,899,960**	4,795,245
Shareholders' deficiency		
Share capital *(note 9)*	**11,356,179**	10,494,623
Option reserve *(note 11)*	**937,437**	1,084,631
Warrant reserve *(note 10)*	**356,181**	233,731
Equity conversions feature (*note 8b*)	**188,838**	188,838
Deficit	**(15,893,248)**	(14,931,017)
Total shareholders' deficiency	**(3,054,613)**	(2,929,194)
Total liabilities and shareholders' deficiency	**1,845,347**	1,866,051

Source: BacTech Environmental Corporation.

Figure 10
BacTech Environmental Corporation
CONDENSED INTERIM CONSOLIDATED STATEMENTS OF CASH FLOWS
Unaudited, expressed in Canadian dollars, unless otherwise stated)

	Nine months ended September 30, 2025	Nine months ended September 30, 2024
	$	$
Cash flow from operating activities		
Cash paid to suppliers, employees and consultants	**(1,170,723)**	(70,872)
Net cash used in operating activities	**(1,170,723)**	(70,872)
Cash flow from financing activities		
Gross proceeds from private placements	**1,266,700**	-
Share issue costs from financings	**(20,066)**	-
Net cash provided by financing activities	**1,246,634**	-
Increase in cash	**75,911**	(70,872)
Cash, beginning of the period	**5,361**	73,199
Cash, end of the period	**81,272**	2,327

Source: BacTech Environmental Corporation.

Recent Events

December 9, 2025—*Announced Acceptance of technical paper for presentation at Minerals Processing Circuits April 23-24 2026 Cape Town, South Africa.* BacTech MIRARCO co-authored paper entitled "The economic recovery of metal values from flotation tailings through magnetite and ammonium sulphate co-production in a zero-waste framework". The paper is intended for senior technical personnel in mining companies to illustrate how the zero tailings technology can be deployed to treat current process tails to enhance overall metal recovery while creating new revenue streams and mitigating the need for long-term tailings storage.

December 1, 2025—*Announced Appointment of Brett Whalen to Board of Directors.* BacTech announced that investment banker and mining finance executive Brett Whalen has joined its Board of Directors. The Company highlighted his two decades of capital markets experience and track record financing mining and technology businesses, positioning him to support BacTech's growth strategy, including its Ecuador bioleach plant and Canadian "zero-waste" initiatives. Whalen's appointment further strengthens the board following the passing of long-time director, and father of Brett, Don Whalen.

November 28, 2025—*Unveiled New Website.* BacTech launched a redesigned corporate website, positioning it as a central hub for investors and stakeholders to track progress on the Tenguel (Ecuador) bioleaching project, the Sudbury pyrrhotite "zero-waste" initiative, and other pipeline opportunities. The site refresh emphasizes the Company's green-mining value proposition, provides updated project pages for Ecuador, Canada, and Peru, and integrates investor materials, news, and educational content on bioleaching and zero-tailings processing.

November 27, 2025—*Reported Earnings Results for the Third Quarter and Nine Months Ended September 30, 2025.* BacTech reported its Q3 2025 financial results, providing an update on cash, expenses, and ongoing R&D and project development activities. Management reiterated that funds raised in 2025 are being deployed toward advancing the Tenguel bioleach plant engineering and permitting, as well as pyrrhotite "zero-waste" work in Sudbury, while continuing to operate without current production revenue. The filing also updated shareholders on progress toward project financing and IP development.

November 4, 2025—*Strengthened Balance Sheet Through Convertible Debenture Restructuring, Reducing Outstanding Debt.* BacTech announced an agreement with Brett Whalen and his debenture holdings to restructure and reduce outstanding convertible debt. The transaction converted Brett Whalen's debentures into equity, lowering near-term obligations and simplifying the capital structure. Management framed the move as a key step in positioning BacTech for project financing on its Ecuador and Canadian programs by improving the balance sheet and aligning long-term supporters with equity upside.

October 22, 2025—*Presented at the International Mining & Resources Conference (IMARC) Sydney, Australia.* Dr. Paul Miller VP Technology BacTech presented to senior international mining and government personnel "Turning waste into Wealth" a summary of BacTech's green technology for transforming mine waste into magnetite, fertilizer, and new revenue streams. The presentation was aimed at attracting end-user and government interest for development and deployment of the new technology at mine sites on a global basis.

October 27, 2025—*Presented at the AI & Technology Virtual Investor Conference.* BacTech announced its participation in the AI & Technology Virtual Investor Conference on October 28th, noting that CEO Ross Orr would present the Company's bioleaching and zero-waste technologies to a global investor audience. The presentation was positioned as an opportunity to highlight BacTech's use of advanced process modeling and data-driven design in bioleach circuits and to introduce the Company's critical-minerals and green-iron story to technology-oriented investors.

September 30, 2025—*Mourned the Passing of Don Whalen.* BacTech reported the passing of director Donald (Don) Whalen and acknowledged his long service and support as a board member and mining executive. The release expressed condolences to his family and emphasized Whalen's role in guiding BacTech's strategy over many years, particularly in the early development of its environmental bioleaching model.

September 17, 2025—*All Shareholder Proposals Carried at Annual General Meeting (AGM).* Following its AGM, BacTech reported that all management proposals were approved by shareholders. Resolutions included the election of directors, re-appointment of auditors, and approval of the Company's stock option plan and related routine corporate items. The meeting confirmed board composition heading into the next phase of project financing and development.

August 25, 2025—*Notice of the Annual and Special Meeting of Shareholders.* BacTech issued formal notice of its upcoming annual and special meeting, outlining the record date, meeting logistics, and agenda items. Matters to be voted on included the election of directors, auditor appointment, stock plan ratification, and other standard corporate resolutions, with the circular providing background on director nominees and governance policies.

August 28, 2025—*Reported Earnings Results for the Second Quarter and Six Months Ended June 30, 2025.* In its Q2 2025 results, BacTech updated investors on cash use and progress across its project pipeline. The Company detailed ongoing expenditures on engineering and feasibility work for the Tenguel plant, advancement of zero-waste patent development, and continued efforts to secure long-term project financing. Management reiterated its focus on non-dilutive and partnership-based funding where possible.

June 18, 2025—*Filed Provisional Patent Application to Expand Its Zero-Waste Processing Technology Beyond Bioleaching.* BacTech filed a provisional patent application that broadens its zero-waste processing concept beyond the initial pyrrhotite bioleach flowsheet. The new filing extends IP coverage to downstream processing of iron and acid streams, enabling the production of saleable magnetite (green iron) and ammonium sulphate fertilizer alongside metal recovery. The Company sees this as a way to increase revenue streams, reduce tailings liabilities, and make rehabilitation of legacy sulphide tailings economically attractive.

June 2, 2025—*Closed Final Tranche Of Unit Financing*. BacTech reported the closing of the final tranche of its non-brokered unit financing, bringing total gross proceeds to approximately C$1.27 million. In this last tranche, the Company issued additional common shares and warrants, with standard two-year $0.10 warrants and an acceleration clause. Proceeds are earmarked for advancing the zero-waste patent work, continued engineering on the Tenguel plant, and general working capital.

May 30, 2025—*Reported Earnings Results for the First Quarter Ended March 31, 2025.* BacTech's Q1 2025 results outlined early-year spending patterns, mainly on R&D and corporate development. The Company provided commentary on the unit financing launched in late February, the first and second tranches subsequently closed, and the ramp-up of patent and engineering activity around the zero-waste platform. Management reiterated that operating losses are consistent with a development-stage company without production revenue.

May 23, 2025—*Closed Oversubscribed Unit Financing*: *Exceeds Initial Goal of $1M by 26.6%.* BacTech announced that its non-brokered unit financing was oversubscribed, closing with total subscriptions of C$1,266,000 compared with the original C$1 million target. The financing involved units with common shares and two-year $0.10 warrants (with an acceleration clause), modest finder's fees, and insider participation. The Company stated that a portion of the funds would support additional testing related to its "Zero Waste" patent concept for zero-tailings mineral processing, as well as general corporate purposes.

April 29, 2025—*Reported Earnings Results for the Full Year Ended December 31, 2024.* BacTech released its FY 2024 financials, summarizing the year's spending on the Tenguel (Ecuador) bioleach project, Sudbury pyrrhotite R&D, and corporate overhead. The Company also disclosed that its auditors had raised a "going concern" note, reflecting the need for continued access to equity or project financing while the business remains pre-revenue. Management emphasized 2024 as a year of IP and project derisking to position for future funding and construction decisions.

April 4, 2025—*Lodged Patent for Zero Waste Initiative, Transforming Mine Waste into High-Value Green Commodities.* BacTech announced that it had formally lodged a patent for its zero-waste bioleaching process that combines metal recovery with the production of high-purity magnetite (for green steel and pigments), ammonium sulphate fertilizer, and precipitated nickel, cobalt, copper, and other metals. The process is designed to treat pyrrhotite/pyrite tailings and similar sulphide wastes, aiming to convert what is currently an environmental liability into a suite of marketable products, with initial application focused on Sudbury's large pyrrhotite tailings inventory.

March 31, 2025—*Announced Second Closing of Unit Financing.* BacTech reported a second closing of its non-brokered unit financing, adding further capital to the C$531,700 in initial commitments announced in February. The Company issued additional units with common shares and $0.10 warrants, bringing total proceeds closer to the eventual C$1.27 million. Funds are being used for zero-waste patent and pilot work, corporate development, and general working capital.

March 7, 2025—*Closed First Tranche Of Unit Financing.* The Company closed the first tranche of its previously announced unit financing, confirming gross proceeds from early subscriptions and issuing the initial block of units. BacTech reiterated that proceeds would support advancement of its "Zero Waste" patent program and ongoing work toward commercializing bioleaching projects in Ecuador and Canada.

February 28, 2025—*Announced Latest Capital Raise*. BacTech announced it had arranged a non-brokered unit financing, securing confirmations totaling approximately C$531,700. Each unit comprised one common share and a two-year warrant at $0.10, with an acceleration clause. The Company stated that proceeds would primarily fund work on its patented zero-waste processing technology and provide general working capital as it prepares for larger project financings.

February 25, 2025—A*nnounced that it will be Exhibiting at the Prospectors and Developers International Convention (PDAC).* BacTech announced it would exhibit at PDAC in Toronto, highlighting a booth presence focused on its Tenguel gold-arsenic bioleaching project and the Sudbury zero-waste pyrrhotite initiative. The Company framed PDAC as a key forum to meet investors, potential strategic partners, and government stakeholders interested in ESG-aligned mineral processing and critical-minerals supply.

April 19, 2024—*Appointed the President of Ecuador's Chamber of Mines, Carolina Orozco, to Board of Directors.* BacTech appointed Carolina Orozco, President of Ecuador's Chamber of Mines, to its Board. The Company highlighted her experience in Ecuadorian mining policy, stakeholder relations, and ESG issues, noting that her guidance would be particularly important as BacTech advances its Tenguel gold-arsenic bioleach plant through permitting and community engagement.

April 5, 2024—*Unveiled Intellectual Property for 'Zero-Waste' Metals Recovery & Fertilizer Production.* BacTech unveiled an expanded IP strategy around a zero-waste bioleach process that recovers nickel, cobalt, copper and iron from pyrrhotite/pyrite tailings and converts residual acids into ammonium sulphate fertilizer. The Company described the flowsheet as capable of generating multiple revenue streams while leaving behind only benign silicate material, positioning the technology as a potential "circular economy" solution for historic sulphide tailings globally.

April 25, 2024—*Reported Earnings Results for the Full Year Ended December 31, 2023.* BacTech reported its 2023 year-end financials, summarizing expenditures on the Tenguel ESIA, early engineering, and Canadian R&D. The release also referenced audit commentary, including a standard going-concern note given the Company's need for ongoing external financing while it remains pre-revenue and project-development focused.

January 16, 2024—*Provided a Follow-Up Update on Sudbury Pyrrhotite Tailings R&D Project.* BacTech provided a technical and project-status update on its Sudbury pyrrhotite tailings R&D program. The Company discussed progress in pilot-scale testing with MIRARCO, emphasizing the potential to recover nickel, cobalt, copper, sulphur, and green iron from legacy pyrrhotite tailings through its zero-waste bioleach process. The update framed the Sudbury work as a potential C$15-billion-plus opportunity in critical minerals and green steel feedstock, and as a template for future zero-waste projects.

Risks and Disclosures

This Executive Informational Overview® (EIO) has been prepared by Crystal Research Associates, LLC ("CRA") with the assistance of BacTech Environmental Corporation ("BacTech" or "the Company") based upon information provided by the Company. CRA has not independently verified such information. Some of the information in this EIO relates to future events or future business and financial performance. Such statements constitute forward-looking information within the meaning of the Private Securities Litigation Act of 1995. Such statements can only be predictions and the actual events or results may differ from those discussed due to the risks described in BacTech's SEDAR statements on forms filed from time to time.

The content of this report concerning BacTech has been compiled primarily from information available to the public released by the Company through news releases and other filings. BacTech is solely responsible for the accuracy of this information. Information as to other companies has been prepared from publicly available information and has not been independently verified by BacTech or CRA. Certain summaries of activities and outcomes have been condensed to aid the reader in gaining a general understanding. CRA assumes no responsibility to update the information contained in this report. In addition, for year one of its agreement, CRA has been compensated by the Company in cash of sixty thousand dollars for its services in creating this report and for quarterly updates.

Investors should carefully consider the risks and information about BacTech's business, as described below and more fully detailed in the Company's recent filings. Investors should not interpret the order in which considerations are presented in this document or other filings as an indication of their relative importance. In addition, the risks and uncertainties covered in the accompanying sections are not the only risks the Company faces. Additional risks and uncertainties not presently known to BacTech or which it currently believes to be immaterial may also adversely affect the Company's business and are outlined in the Company's recent filings. If any such risks and uncertainties develop into an actual event, BacTech's business, financial condition, and results of operations could be materially and adversely affected.

This report is published solely for information purposes and is not to be construed as an offer to sell or the solicitation of an offer to buy any security in any state. Past performance does not guarantee future performance. For more complete information about the risks involved in investing in the Company, as well as for copies of this report, please contact BacTech by calling (416) 813-0303 x222.

Risk Factors

BacTech's strategy is to develop remediation and metal recovery projects that apply its bioleaching technology to create long-term value for shareholders. This model depends on continued access to capital and is exposed to risks related to commodity prices, project development, and operating performance. Given the early stage of BacTech's projects and its current liquidity constraints, investors should carefully consider the financial, environmental, operational, and jurisdictional risks outlined below.

Need for Additional Financing

BacTech does not yet generate operating cash flow and relies on external financing to fund project assessment, development, and corporate overhead. There is no assurance that additional equity or debt capital will be available when required, or on terms that are acceptable to the Company. Market volatility, sector sentiment, or Company-specific factors may restrict access to capital. If BacTech cannot raise sufficient funds, it may be forced to slow or halt project development, restructure obligations, or liquidate assets to satisfy creditor claims.

Dependence on Management

BacTech's success is closely tied to a small group of senior executives and technical staff with specialized experience in bioleaching, project development, and mine remediation. Losing one or more key individuals, or failing to attract and retain additional qualified personnel, could delay or derail project execution. Investors are effectively relying on the judgment and capabilities of this team, and the Company does not carry key person insurance on its employees.

Competition

BacTech competes with engineering, remediation, and technology companies for access to economically attractive tailings, waste streams, and concentrates, as well as for capital and talent. Many competitors have stronger balance sheets, larger technical teams, and longer operating track records. This competition could limit BacTech's ability to secure feed stock, acquire new projects on favorable terms, recruit specialized staff, or raise capital.

While bioleaching for high-arsenic materials is not yet a crowded field, management expects competitive pressure to increase over time as new technologies emerge or existing operators expand into this niche. Even if BacTech's technology is currently more advanced or commercially proven, there is no guarantee it will maintain a technical or economic edge. Inability to differentiate, maintain cost advantages, or license the technology on acceptable terms could negatively affect revenue, margins, and overall business performance.

Protection of Intellectual Property Rights

BacTech's business relies on its ability to protect its own intellectual property (IP) and on the strength of IP held or licensed from third parties. The Company holds certain patents and has applications pending, but also depends on proprietary know-how, trade secrets, and process expertise that may be difficult to fully protect. Even with confidentiality and non-use agreements in place, unauthorized use, misappropriation, or leakage of proprietary technology can be hard to detect and expensive to pursue.

Enforcing IP rights through litigation, especially in multiple jurisdictions, may be prohibitively costly and time-consuming. In some countries, legal protections for patents and trade secrets may be weaker or inconsistently enforced, which could limit BacTech's ability to defend its competitive position.

Obtaining and Enforcing Patents

Patent protection for process technologies is inherently uncertain and often involves complex legal and technical questions. BacTech cannot be certain that current or future patent applications will be granted, that granted patents will contain claims broad enough to protect its technology, or that patents will not be challenged, narrowed, invalidated, or circumvented by competitors.

There is also a risk that patents held by others could restrict BacTech's freedom to operate in certain jurisdictions or applications. The Company may be required to obtain additional licenses, redesign processes, or cease certain activities if third-party IP is found to cover key elements of its technology. Any such outcome could weaken BacTech's competitive position and adversely affect its profitability.

Claims of Infringement of Third-Party Rights

Although BacTech is not currently aware of any IP infringement claims against its technology, third parties could assert such claims in the future. Allegations that BacTech's processes or licensed technologies infringe third-party rights, whether ultimately upheld or not, could result in costly and time-consuming disputes.

Defending these claims could require significant management attention and legal expense. BacTech or its licensors might be required to modify technology, obtain additional licenses on unfavorable terms, or discontinue certain activities. Any of these outcomes could negatively impact revenue, operating results, and financial condition.

Conflicts of Interest

Some directors and officers of BacTech also serve as directors, officers, or shareholders of other companies, including resource or service companies that may seek participation in projects similar to those pursued by BacTech. Situations may arise where these parties have competing interests in the negotiation or allocation of opportunities.

Canadian corporate law requires BacTech's directors to act honestly, in good faith, and in the best interests of the Company. Directors with a material conflict are expected to abstain from voting on related matters. Nonetheless, conflicts of interest could influence strategic decisions or the allocation of capital among projects. Investors should recognize that BacTech may at times participate in joint ventures or reallocate property interests in ways influenced by the financial position and priorities of related entities.

Additional Risks Relevant to BacTech

Additional risk to consider for a company at BacTech's stage and in its niche are described below. These are consistent with typical disclosures for development-stage environmental and mining-related businesses and with BacTech's own filings and public communications.

Project Development, Construction, and Scale-Up Risk

BacTech's projects require detailed engineering, permitting, construction, commissioning, and operational ramp-up before generating cash flow. Any delays, cost overruns, contractor performance issues, or technical challenges in scaling the bioleaching process from pilot work to full commercial operations could materially impact timing, capital requirements, and project economics. There is no guarantee that the plants will perform as modeled, achieve expected recoveries, or operate reliably at nameplate capacity.

Permitting and Regulatory Risk

BacTech's activities depend on obtaining and maintaining multiple permits and approvals in mining jurisdictions that can be complex and subject to change. Environmental and construction permits, as well as ongoing compliance with environmental, health, safety, and mining regulations, are critical to project timelines. Regulatory standards may become more stringent over time, or community consultation processes could extend schedules and increase costs. Failure to secure or maintain key permits on acceptable terms, or in a timely manner, could delay or prevent project development.

Foreign Operations, Political, and Social Risk

BacTech operates and plans projects in foreign jurisdictions where political, legal, tax, and regulatory frameworks differ from those in Canada. Changes in government policy, taxation, environmental regulation, mining law, foreign exchange controls, or community consultation requirements could affect project viability. In addition, local community opposition, social unrest, or shifts in public sentiment toward mining and processing activities may delay or limit operations, increase costs, or harm BacTech's reputation.

Environmental, Health & Safety, and ESG Risk

Although BacTech's business model is centered on environmental remediation, its activities are still subject to extensive environmental and health-and-safety regulations. Accidents, process upsets, or failures in containment and waste management could result in environmental damage, regulatory penalties, remediation liabilities, or reputational harm. The Company may also face evolving expectations from regulators, communities, and investors around ESG standards, transparency, and community benefits. Meeting these expectations could require additional investment and management attention.

Commodity Price and Feedstock Risk

Project economics are sensitive to prices for gold and other metals recovered through BacTech's bioleaching plants, as well as to the quality, availability, and terms of mine tailings and concentrate feedstock. Weak or volatile metal prices could reduce projected returns, limit the willingness of partners to commit feedstock, or impair the value of remediation projects. If BacTech is unable to secure sufficient volumes of suitable material at expected grades and terms, plant utilization rates and cash generation could fall short of expectations.

Counterparty and Partnership Risk

BacTech's strategy depends on counterparties such as small-scale miners, concentrate producers, royalty partners, strategic investors, engineering firms, and off-take partners. If these counterparties default, fail to perform, or choose to alter or terminate agreements, BacTech may face operational disruptions, funding gaps, or reduced revenue. Concentration of project exposure with a limited number of partners further increases this risk.

Liquidity, Going Concern, and Dilution Risk

BacTech has a history of operating losses and a working capital deficit, and its auditors and financial statements highlight material uncertainties related to the Company's ability to continue as a going concern. To bridge its funding needs, BacTech has relied on equity issuances, convertible debentures, and other financings, including its Regulation A offering and ongoing unit financings. Future capital raises may be required at lower share prices, resulting in significant dilution for existing shareholders. If the Company cannot secure sufficient funding, it may be unable to meet obligations or continue as a going concern.

Glossary

Acid mine drainage—Water that becomes acidic and metal-laden after contact with sulphide-bearing rock or tailings and can contaminate surface and groundwater if not properly controlled or treated.

Ammonium sulphate—An inorganic salt commonly used as fertilizer; in BacTech's Zero Tailings™ flowsheet it is produced from process streams and sold as an agricultural nutrient.

Arsenic trioxide—A toxic, volatile arsenic compound commonly produced when arsenic-bearing materials are roasted; it must be captured from off-gases and managed as a long-term environmental liability.

Arsenopyrite (FeAsS)—An iron-arsenic sulfide mineral commonly associated with gold ores; important because it can carry arsenic that complicates processing and environmental management.

BACOX®—BacTech's proprietary stirred-tank bioleaching process that uses naturally occurring bacteria, air, and reagents to oxidize sulphide minerals, liberate metals, and fix arsenic in a stable residue.

Bankable Feasibility Study (BFS)—A detailed independent technical and economic study of a project that provides sufficient engineering and cost detail to support project financing and investment decisions.

Bioleaching—The use of microorganisms to oxidize sulphide minerals in slurry, releasing valuable metals into solution without the high temperatures and off-gases associated with roasting or smelting.

Concentrate—A high-grade mineral product, usually produced by flotation, which contains elevated levels of valuable metals and is sold to smelters or processed in specialized plants.

Cyanidable—Capable of being effectively leached with cyanide; used to describe ore or residue in which gold and/or silver can be readily recovered using conventional cyanide leaching circuits (e.g., agitation leach, CIP/CIL, or Merrill-Crowe).

Doré bar—A semi-refined gold-silver bar poured at a mine or processing plant and shipped to a refinery for final purification into marketable bullion.

Electrowinning—An electrochemical recovery step that plates dissolved metal onto cathodes. In some gold circuits, it can be used to recover gold from solution prior to smelting to doré.

Ferric arsenate—A stable iron–arsenic compound used to immobilize arsenic; disposal acceptability depends on jurisdiction and leachability testing (e.g., TCLP).

Flowsheet—A diagram that outlines the sequence of processing steps, equipment, and material flows in BacTech's bioleaching and Zero Tailings™ circuits, showing how feed material is transformed into recovered metals and environmentally stable residues.

Green Bond—A fixed-income security whose proceeds are earmarked to finance or refinance environmentally beneficial projects, typically structured under market standards such as ICMA's Green Bond Principles.

Investment Protection Agreement (IPA)—An agreement between a government and an investor that provides protections such as tax stability, international arbitration, and safeguards for property rights over a defined period.

Leachate—Liquid that drains or is pulled through solid material and picks up dissolved chemicals or metals along the way. In mining and tailings contexts, it's the water that comes into contact with ore or tailings and can carry dissolved metals, salts, or acidity.

Liquor—In BacTech's bioleaching/hydrometallurgical context, "liquor" means the water-based process solution circulating through the plant. It contains dissolved metals and chemical species (for example, sulfate, iron, and other ions) and is the liquid phase from which metals are later recovered.

Lixiviant—The chemical solution used to dissolve (leach) a target metal from ore, concentrate, or tailings during a hydrometallurgical process.

Magnetite—An iron oxide mineral (Fe_3O_4) that can be recovered from pyrrhotite tailings and sold as an iron feedstock for steelmaking or other industrial uses.

Merrill-Crowe circuit—A zinc-precipitation process in which clarified, de-aerated gold-silver solutions are contacted with zinc dust so that precious metals precipitate and can be recovered in filter presses.

Mixed hydroxide precipitate—An intermediate nickel and cobalt product formed by precipitating dissolved metals as mixed hydroxides from solution, which can be further refined into higher-purity products for use in batteries, stainless steel, and other applications.

Net present value (NPV)—The sum of expected future cash flows from a project, discounted back to today at a chosen rate to reflect the time value of money and project risk.

Net Smelter Royalty (NSR)—A revenue-based royalty paid to a third party (often the original property seller or a royalty company) that equals a fixed percentage of the "net" proceeds from metal sales.

Passivation—When a material's surface forms a thin, stable film that reduces further chemical reaction. In metallurgy and processing, it usually means a surface layer (often an oxide, sulphate, or similar coating) forms on a metal or mineral grain and slows or stops leaching/oxidation, which can reduce recovery rates unless the layer is broken up or conditions are adjusted.

Patent Cooperation Treaty (PCT)—An international filing system that lets an inventor submit one "international" patent application to preserve the option to seek patent protection in many countries. It does not grant a single worldwide patent. Instead, it buys time and standardizes early steps, and the applicant later chooses specific countries to enter and pursue patents (the "national phase").

Pressure oxidation (POX)—A high-temperature, high-pressure hydrometallurgical process that uses oxygen in an autoclave to oxidize sulphide minerals, commonly used to treat refractory gold ores.

Pyrrhotite—An iron sulphide mineral that often occurs in large tailings deposits; when processed using BacTech's technology, it can yield iron, fertilizer products, and base metals such as nickel and cobalt.

Refractory ore—Ore in which gold or other metals are locked within sulphide minerals or silicate lattices, making them difficult to recover with conventional cyanide leaching unless a pre-oxidation step is used.

Tailings—The finely ground waste material that remains after valuable minerals have been extracted and which must be stored and managed to prevent acid mine drainage and other environmental impacts.

U.S. EPA Toxicity Characteristic Leaching Procedure (TCLP)—A standardized lab extraction test (SW-846 Method 1311) that simulates landfill leaching to estimate what contaminants could leach from a waste; results are compared to EPA regulatory limits to determine whether the waste is hazardous for toxicity under RCRA.

Zero Tailings™—BacTech's initiative and flowsheet concept for treating pyrrhotite tailings and other mine residues to recover iron, fertilizer products, base metals, and clean water while reducing or eliminating long-term mine-waste liabilities.

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