# BacTech Environmental Initiates Rare Earth Element R&D Program

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**Reliance on China for key minerals and metals for national security and clean energy transition spurs governments and private industry to seek domestic bioleaching alternatives**

TORONTO, Jan. 18, 2022 - BacTech Environmental Corp. (CSE:BAC), (CNSX:BAC.CN), (OTC:BCCEF), (FSE:0BT1) ("BacTech or the Company"), a commercially proven environmental technology company delivering effective and eco-friendly biomining and remediation solutions, today announced its intention to investigate the use of bioleaching as a tool in liberating Rare Earth Elements ("REEs").

Interest in the potential use of bioleaching for the metallurgical extraction of REEs has risen in recent months, with media reports that the US is actively seeking steps to end dependency on imports of key metals and minerals from China. REEs are classified as strategic elements by the US government, and the Pentagon has issued a Request for Tender to explore bioleaching opportunities with the goal of establishing a domestic industry and providing REE supply stability. REEs are deemed essential for everything from US national security and energy transition delivery plans, to maintaining supply chain continuity for medical and consumer technologies along with many other everyday products.

"The US government has made it crystal clear that it is very uncomfortable with China controlling 90% of the global supply of REEs," said BacTech President and CEO Ross Orr. "We are expanding our own internal investigation of bioleaching potential in this high demand area, with the intent to deliver adaptive technology and provide cleaner and cheaper alternatives to REE processors. I am encouraging both public agencies and private entities in the REEs space to connect with BacTech and provide us with representative concentrate samples to use in our investigation. This is another example of our interest and ability to test and push the boundaries of using natural bacteria as an environmentally-friendly catalyst to safely increase metal production."

Conventional REE processing typically uses harsh chemical environments of concentrated acids or alkalis at high temperatures to extract REEs from a broad variety of minerals. By comparison, the use of bioleaching has potential advantages as the complex nature of REE minerals provides multiple target sites for microbial activity to release metals of value including REE. Bioleaching also represents a more natural and environmentally acceptable processing alternative to conventional processing. Conceptual downstream treatment of REE solutions produced by bioleaching would be similar to existing downstream operations involving separation and purification of individual elements from the liquor. Bioleaching is therefore being proposed as replacing only a current step of leach extraction in an REE flowsheet.

Three different groups of organisms have been promoted as possible candidates useful in extraction of REE. These are classified as aerobic autotrophs (the current suite of microbial mix used in BacTech's bioleaching or bio-oxidation for commercial refractory gold treatment); aerobic heterotrophs and anaerobic autotrophs. To date, aerobic autotrophs have demonstrated a robust ability to breakdown a wide variety of mineral matrices and their potential application in extractive metallurgy of complex REE minerals will be explored first. The design and engineering of agitated aerated reactor systems suitable for application of aerobic autotrophs to metallurgical flowsheets is well understood and has been proven over many years.

BacTech fully acknowledges that bioleach processing may not be appropriate to all REE projects due to differences in mineralogy, but believes the momentum and interest to pursue environmentally responsible processing alternatives warrants further exploration. As a first objective, BacTech will source materials from REE projects with mineralogy believed to be most amenable to bioleach processing. Positive results from such work would lead to more detailed testing of downstream processing solutions in order to demonstrate proof of concept to specific REE projects.

About the Ponce Enriquez Bioleaching Project

BacTech is planning to build a new owner-operated bioleaching facility near Ponce Enriquez, Ecuador, in a region where arsenic is associated with gold ore (Arsenopyrite). The Company's plan is to build a 50 tpd bioleach plant capable of treating high gold/arsenic material. A 50 tpd plant, processing 1.75 ounces of gold per tonne of feed, similar to feeds available to the Company from local miners, would produce approximately 26,000 ounces per year. Plant designs are modular and can be expanded without affecting ongoing production. The total concentrate market in the Ponce Enriquez area is estimated to be between 200 and 250 tonnes per day, allowing for increased throughput potential with a larger plant.

In total, there are over 90 small mines operating in the area. BacTech intends to return local miner compensation back to previous payment levels, prior to a sweeping price reduction imposed by Chinese buyers due to recent import levies on arsenic/gold concentrates entering China. BacTech continues to investigate the prospects of establishing additional modern bioleaching facilities across other areas of Ecuador, Peru, and Colombia. Where possible, the Company will partner with national and local governments, non-governmental organizations (NGOs), and others to assist with the funding of these projects.

About BacTech Environmental Corporation

BacTech is a proven environmental technology company, delivering effective and eco-friendly biomining and remediation solutions to commercial operations to process and recover preferred metals (gold, silver, cobalt, and copper) smartly and safely remove and transform harmful contaminants like arsenic into benign EPA-approved products for landfill. Tapping into numerous environmental and economic advantages of its proprietary method of bioleaching, BacTech uses naturally occurring bacteria, harmless to both humans and the environment, to neutralize toxic mining sites with high-pay potential. BacTech is publicly traded on the CSE under the symbol "BAC"; on the OTC as "BCCEF"; and the Frankfurt Stock Exchange as "OBT1".

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This news release contains "forward-looking information", which may include, but is not limited to, statements with respect to future tailings sites, sampling or other investigations of tailing sites, the Company's ability to make use of infrastructure around tailings sites or operating performance of the Company and its projects. Often, but not always, forward-looking statements can be identified using words such as "plans", "expects", "is expected", "budget", "scheduled", "estimates", "forecasts", "intends", "anticipates", or believes" or variations (including negative variations) of such words and phrases, or state that certain actions, events or results "may", "could", "would", "might" or "will" be taken, occur or be achieved. Forward-looking statements involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance, or achievements of the Company to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements. Forward-looking statements contained herein are made as of the date of this news release and the Company disclaims, other than as required by law, any obligation to update any forward-looking statements whether because of new information, results, future events, circumstances, or if management's estimates or opinions should change, or otherwise. There can be no assurance that forward-looking statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. Accordingly, the reader is cautioned not to place undue reliance on forward-looking statements.

Shares outstanding: 157,755,558

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