

Jack-in-the-Stox: Rubidium, A Critical Metal in Search of a Market.

written by Jack Lifton | October 21, 2026

In his ongoing *Jack-in-the-Stox* series, [Jack Lifton](#) comments on public companies, technologies, capital markets, supply chains and geopolitics. He is not a licensed investment adviser, and his views are provided for informational purposes only. Nothing in this column constitutes investment advice or a recommendation to buy, sell or hold any security.

Rubidium, chemical symbol Rb and atomic number 37, is one of those elements whose importance to modern technology far outweighs its public recognition. It is an alkali metal, chemically related to lithium, sodium, potassium, and cesium. Discovered in 1861 by Robert Bunsen and Gustav Kirchhoff, rubidium is a soft, highly reactive metal with few direct industrial applications in its elemental form. However, its compounds are used in specialized electronics, precision timing devices, scientific instrumentation, and emerging quantum technologies. The United States government classifies rubidium as a critical mineral, but its inclusion on that list raises a question I believe investors should always ask: Does an element's technological importance necessarily translate into an economically attractive opportunity for production?

Rubidium is not particularly rare in the Earth's crust. It occurs in a variety of minerals, most commonly substituting for

potassium in mica and feldspar. It also occurs in lithium-bearing pegmatites, particularly those containing lepidolite. Rubidium is commercially unusual because it is rarely found in concentrations sufficient to justify mining it as the principal product. Historically, the industry has obtained commercial rubidium largely as a byproduct of processing minerals mined for other elements, particularly lithium and cesium. The distinction between rubidium occurring in a mineral deposit and an economically recoverable rubidium resource is fundamental. The critical minerals industry's promotional literature also too often overlooks this distinction.

The global market for rubidium is extraordinarily small. The United States Geological Survey has estimated [American consumption](#) in end-use products at less than two metric tons annually. Domestic mine production is negligible, and American users depend on imported rubidium-bearing materials and processed products. No large, transparent international commodity market for rubidium exists, unlike those for copper, nickel, or even the major rare earths. Specialty chemical suppliers often set prices for rubidium metal and its high-purity compounds for relatively small quantities. These prices do not necessarily reflect what an industrial producer could receive for commercial quantities. Investors should be especially careful with calculations that multiply a quoted laboratory chemical price by the number of grams theoretically contained in a mineral deposit. Such arithmetic can produce impressive numbers, but it does not replace a market study.

Why, then, is rubidium considered critical? The answer lies in its applications and the concentration of its supply chain, not in how much is consumed. Rubidium is used in atomic frequency standards and precision timing equipment for communications, navigation, and electronic systems that require extremely stable frequency references. Rubidium atoms also matter in research on

quantum sensing and quantum computing. These are technologically sophisticated applications, but they do not necessarily require large quantities of material. A device that depends upon a few grams of highly purified rubidium may be critically important to its user without creating a large commodity market. Indeed, the more sophisticated the application, the more likely purity, consistency, and supplier qualification will matter than available tonnage.

This brings me to [Quantum Critical Metals Corp.](#) (TSXV: LEAP | OTCQB: ATOXF | FSE: 86A1), a member of the [Critical Minerals Institute](#) (CMI), which has been investigating recovering rubidium and other potentially valuable critical elements from mica-bearing mineralization in Quebec. Quantum's work is particularly interesting because it explores recovering rubidium and gallium from minerals not traditionally exploited as commercial sources of those elements. The company's NMX East project has undergone metallurgical investigations to determine whether it can economically extract and separate the contained elements. Quantum has reported laboratory results indicating approximately [55% recovery of rubidium](#) into solution and approximately [93% recovery](#) of gallium. It has also engaged the University of British Columbia, working with Professor Emeritus David Dreisinger, to investigate improvements in its hydrometallurgical processing technology.

These results deserve attention, but they must be understood in their proper context. Recovery of a chemical element into solution in a laboratory experiment is not the same as producing a saleable industrial product. A laboratory recovery percentage indicates a chemical process's potential effectiveness under specific conditions. It does not establish the capital cost of a commercial plant, reagent consumption and cost, the cost of separating the desired element from accompanying impurities, or the price an industrial customer will pay for the finished

product. Nor does it establish whether the process can operate continuously and reproducibly on feedstocks whose composition may vary over time. These questions must be answered before laboratory success can translate into commercial production.

Rubidium presents some interesting chemical engineering problems. Its chemical similarity to potassium and cesium complicates separation and purification. A process that dissolves rubidium from a mica concentrate must also contend with the other elements dissolved during leaching. The resulting solution must be treated to separate the desired products and reject impurities, and the final rubidium compound must meet the specifications of its intended customers. The economics of this sequence will depend on mineralogy, extraction efficiency, reagent consumption, recycling, energy requirements, waste management, and the required degree of purification. I would be particularly interested in learning whether Quantum's proposed process can produce a rubidium compound of commercially acceptable purity without requiring a series of expensive separation and refining operations.

However, another aspect of Quantum's approach may prove more commercially important than rubidium itself. The company is investigating recovering gallium, and potentially other valuable elements, from the same mineralized material. Gallium has a much more established technological role in semiconductor applications, particularly in gallium arsenide and gallium nitride devices used in communications, power electronics, and other advanced systems. A processing operation that produces several saleable products may have a more attractive economic foundation than one that depends entirely on a single element with a very small market. This possibility deserves serious investigation, but it also introduces additional complexity. Each element must be recovered, separated, purified, and sold. The presence of several critical elements in a mineral deposit

does not automatically make the deposit profitable, and the theoretical combined value of those elements cannot be treated as revenue until the company demonstrates that it can produce them economically and sell them into identifiable markets.

Market size matters most for rubidium. If a new producer developed a process capable of producing substantially more rubidium than the current market consumes, it could find itself competing against a demand structure with little ability to absorb additional supply. The price of a specialty chemical is not independent of the quantity offered for sale. In a small market, even a modest increase in production can disproportionately affect prices. This is one reason I believe a serious rubidium development program must begin with an examination of the customers, their product specifications, annual requirements, and the prices they are willing to pay. Only after establishing those facts can you determine the appropriate scale of a processing operation. Building a plant first and searching for customers afterward is not a business strategy that I would recommend.

Quantum Critical Metals therefore offers investors an interesting case study in the distinction between exploration success and the creation of an industrial business. The company has identified mineralization containing elements of technological interest and has begun investigating methods of recovering them. Its next challenge is to demonstrate a reproducible process that can produce qualified products at a cost that allows profitable sales. I would want to see additional metallurgical testing on representative feedstocks, followed by continuous pilot-scale operations that establish recoveries, reagent consumption, product purity, and the overall mass balance. I would also want to see evidence of discussions with prospective industrial customers and, ultimately, qualification testing using actual products from the proposed

process. These milestones would tell investors much more about the company's commercial prospects than additional announcements about rubidium in its mineral deposits.

This offers a broader lesson for the critical minerals industry. Governments can designate elements as critical, and financial markets can assign substantial speculative value to companies that discover them, but neither governments nor financial markets can suspend economic reality. An element becomes commercially important to a producer when a customer needs it in a particular form, purity, quantity, and at a price that lets the producer earn a return on the capital invested. The entire sequence of mining, beneficiation, chemical extraction, separation, refining, and customer qualification must function as an economically sustainable supply chain. A failure at any point in that sequence can render the underlying mineral resource commercially irrelevant.

I believe rubidium is worth watching, not because it is likely to become the next great bulk commodity, but because its specialized applications illustrate the importance of secure supplies of highly purified materials to advanced industrial technologies. Quantum Critical Metals is attempting to determine whether an unconventional mineral source can be converted into a commercially useful supply of rubidium, gallium, and perhaps other critical elements. That is a legitimate industrial objective, but the effort's success will depend on chemistry, chemical engineering, market development, and economics rather than on designating the contained elements as critical.

For investors, my conclusion is straightforward. Rubidium is technologically important, but its present market is very small. Quantum's work deserves attention as an attempt to develop a new source of specialty critical materials, particularly if recovering gallium and other products can support the overall

economics. The questions that matter are not simply how much rubidium is present or how much can be extracted in a laboratory. They are how much can be produced reproducibly, to what specification, at what cost, and for which customers. Those answers will determine whether Quantum is developing a commercially viable specialty-metals business or merely demonstrating that an interesting collection of chemical elements can be recovered from a mineral deposit.

As I have said many times, **follow where value is added**. In rubidium, as in so many other critical materials, value will not be established by discovering the element in the ground. It will be established by the ability to transform a mineral occurrence into a qualified industrial product that a customer needs and is willing to purchase at a price that sustains its production.