From Brine to Bottle: Voyageur Pharmaceuticals Bets on the Mueller Process in the Iodine Contrast Market

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Control of raw materials is increasingly determining who survives in critical pharmaceutical supply chains, and **Voyageur Pharmaceuticals Ltd.** (TSXV: VM | OTC Pink: VYYRF) is positioning itself accordingly.

In a recent interview with InvestorNews.com host Tracy Hughes, Brent Willis, President, CEO, and Director of Voyageur Pharmaceuticals Ltd., outlined how the company's acquisition of proprietary iodine-extraction technology and the appointment of its inventor, Dr. Brian Mueller, as Director of Chemistry, materially alters Voyageur's cost structure, supply security, and manufacturing strategy.

"Dr. Mueller is a very renowned chemist," Willis said. "He's got over 40 patents behind him, and he's an expert with mineral brine—extraction of minerals from mineral brine water." More importantly for Voyageur, the company now owns the technology outright. "Yeah, 100% exclusive," Willis said. "We were assigned the rights for the IP, so we now own it 100%. We are in control of that IP."

The technology, known as the Mueller Process, targets iodine dissolved in high-salinity brine water produced by oil and gas operations, particularly in the Anadarko and West Texas Basins. Instead of mining iodine as a primary product, Voyageur proposes extracting it from water that is already being pumped to the

surface and must be treated or disposed of. **“Effectively, what we’ll be doing is having water from the oil companies shipped to us, and we will extract the iodine directly from the brine water,”** Willis explained. **“We return a pure salt water, which is important for reinjecting.”**

Initial bench-scale testing, conducted by Dr. Mueller, reported iodine recoveries of approximately 90% from incoming brine to technical-grade iodine, with subsequent conversion to 99.5% purity. The process is closed-loop, with no volatile organic compounds or hazardous emissions, and produces a clean brine suitable for reuse or reinjection.

For Voyageur, the strategic importance lies less in iodine flake sales than in bypassing that step altogether. “With this process, it extracts iodine from the water, and you get iodine in water—pure iodine in water,” Willis said. “For our iodine drug business, we don’t need to make the flake. We can take that iodine-in-water and go directly into manufacturing our drugs.”

That distinction matters because pharmaceutical-grade iodine must meet stringent purity and Good Manufacturing Practice (GMP) standards, adding cost and complexity to traditional supply chains. “Pharmaceutical needs high purity and it has to be manufactured under GMP processing, which is expensive,” Willis said. By vertically integrating extraction and drug manufacturing, Voyageur believes it can operate at materially lower costs than incumbent suppliers.

The company’s stated objective is to manufacture iodine-based contrast agents domestically in the United States, where the iodine contrast market alone represents an estimated US$2.65 billion annually, roughly 39% of global demand. “We will have a site where we are processing iodine water, extracting iodine, and making iodine drugs—being the only iodine drug manufacturer

in the United States," Willis said. "That gives us a huge advantage: supply chain security and low cost."

Global iodine supply is currently concentrated, with most production coming from Chile—largely as a byproduct of mining operations—and Japan, from natural gas fields. U.S. production exists but is largely directed toward industrial uses rather than pharmaceuticals. "The United States has less iodine production, and all that iodine currently is being used for industrial purposes, not pharmaceutical," Willis said.

Voyageur believes the Mueller Process is readily scalable. "You can envision containerized units that we deploy," Willis said. The company has outlined a development path beginning with a 200-ton pilot plant for iodine flake, expanding to roughly 1,000 tons per year, while simultaneously advancing feasibility and financing for iodine drug manufacturing in Texas. "We're looking at production realistically within the next two years," Willis said, noting potential support from U.S. government programs targeting critical minerals and domestic pharmaceutical manufacturing.

Beyond iodine, Willis indicated that the same brine-based approach could be applied to other elements. "The next phase is we're going to be working on our project in Utah and looking at utilizing this technology, adapting it to extract lithium and magnesium—which are both critical minerals—and boron and bromine," he said, referring to Voyageur's Paradox Basin assets.

Iodine is not the company's only focus. Voyageur continues to advance its barium strategy through the Frances Creek barite project, supplying pharmaceutical-grade barium sulfate for contrast media. "We're advancing with our feasibility," Willis said. "We expect to be raising our capex by the end of next year and moving that project into production for likely by the end of

2027.” Throughout the discussion, Willis returned to Voyageur’s core operating philosophy. “Our motto is ‘from the earth to the bottle,’” he said. “We’re effectively going from the wellhead to the bottle—manufacturing drugs in Texas.”

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