

RZOLV Technologies Inc. - The Market Beyond Cyanide

An internal research brief on TAM expansion, platform positioning, partner-led commercialization, and royalty-based valuation potential

Prepared for internal strategic discussion purposes only

Executive Summary

RZOLV Technologies Inc. is a Canadian clean technology company that has developed a **capital-light, partner-led, non-cyanide hydrometallurgical platform** for gold recovery and related metals-recovery applications.

Gold mining relies heavily on cyanide, with approximately **US\$3 billion used in mining annually** and more than **80% of global gold production** dependent on cyanide-based recovery. Yet cyanide is also highly restricted, difficult to permit in many jurisdictions, and increasingly challenged by ESG, transport, detoxification, and community-acceptance concerns. RZOLV's opportunity is to provide a non-cyanide, water-based alternative for the areas where cyanide is weakest: cyanide-constrained jurisdictions, complex ores, copper-gold systems, concentrates, tailings, stranded materials, and secondary feedstocks. This positions RZOLV not as a universal cyanide replacement, but as a targeted solution for stranded, high-value applications where cyanide's restrictions, total cost, and risk profile create room for an enhanced, low-cost, low-impact alternative.



RZOLV's opportunity is not limited to replacing cyanide across the mining industry. The stronger investment thesis is that RZOLV can capture value where cyanide is weakest. In these high-burden applications, cyanide's real cost extends well beyond reagent price to include higher consumption, complex flowsheets, detoxification, permitting friction, transport and handling risk, community opposition, smelter charges, payability losses, and delayed settlement. RZOLV highlights include;

- Large **\$3B measurable market floor** anchored by the existing cyanide market
 - Additional market potential of **\$4B to \$13B per year** in cyanide constrained applications
 - The partner-led model **accelerates commercialization** with recurring high-margin royalty revenue
 - Highly motivated customer base facing permitting, ESG, and ore-complexity pressures
 - Competitive price and performance profile versus cyanide
 - Environmentally progressive **non-toxic, non-cyanide alternative**
 - Limited direct competition in high-value cyanide failure windows
 - Water-based chemistry designed for **simple integration** into existing infrastructure
 - Capital-light model with reduced manufacturing and logistics burden
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The RZOLV technology is an aqueous redox-complexation platform designed to dissolve gold through controlled oxidation while stabilizing dissolved metal species through ligand complexation under a managed pH-ORP operating window. This gives RZOLV a more defensible process-chemistry identity: a water-based, non-cyanide system intended to remain compatible with conventional hydrometallurgical processes while addressing applications where cyanide is technically, economically, environmentally, or socially constrained.

The market backdrop is highly supportive. Mining companies are increasingly dealing with complex ore bodies, copper-gold systems, sulfide-transition material, concentrates, tailings, and other feed sources that can be difficult or costly under conventional cyanide processing. At the same time, strong gold prices are encouraging renewed evaluation of marginal, stranded, and previously uneconomic materials, while environmental and permitting scrutiny continues to increase pressure on operators to consider lower-impact alternatives. This environment also aligns with the interests of major chemical companies seeking differentiated growth beyond commodity reagents and with investors' preference for capital-light IP and royalty models once commercial validation becomes visible.

RZOLV's addressable market should be framed in layers. The measurable floor is the existing sodium cyanide market used in gold and silver processing. The broader platform opportunity extends into complex ores, copper-gold systems, concentrates, tailings, stockpiles, stranded materials, cyanide-constrained jurisdictions, and secondary precious-metal feedstocks. The research brief frames the current platform opportunity at approximately **US\$4–7 billion per year**, expanding over the medium term to approximately **US\$8–13 billion per year** as the company moves beyond direct cyanide replacement into broader process-enabling applications.

The proposed business model is a major part of the investment case. Rather than building a global chemical manufacturing, logistics, inventory, receivables, product-stewardship, and technical-sales infrastructure internally, RZOLV can pursue a **partner-led commercialization model**. Under this structure, established chemical, mining-service, or industrial partners could support manufacturing, blending, QA/QC, SDS requirements, customer relationships, logistics, technical service, and product stewardship. RZOLV would focus on chemistry, intellectual property, technical support, testwork, process optimization, and partner enablement.

The illustrative revenue model demonstrates the leverage in that structure. Using a scenario assumption of a **10% royalty on partner-level reagent sales**, plus annual license or technical-support fees, the Base case reaches approximately **US\$93.1 million of annual RZOLV revenue by 2035**, supported by approximately **US\$905.9 million of partner-level reagent sales** and only **4.1% blended penetration** of the modeled addressable material pool. This is important because it shows that meaningful revenue creation does not require broad global cyanide displacement; it requires selective adoption across multiple high-value categories where cyanide is constrained or suboptimal.

The investment thesis is therefore straightforward: **RZOLV has a measurable market floor, a broader platform opportunity, a differentiated non-cyanide chemistry, a partner-led commercialization path, and a royalty model that could convert selective adoption into scalable significant recurring revenue**. The company does not need to win the entire cyanide market to justify meaningful value creation. If successful, RZOLV could evolve from an emerging reagent developer into a multi-billion dollar hydrometallurgical platform with predictable recurring revenue potential, strategic partner relevance, and significant valuation leverage.

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