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Joint News Release

BASF and hydroGEOPHYSICS Consulting, partner to enhance secondary copper recovery through novel mining technologies.

- **BASF and hydroGEOPHYSICS Consulting (HGI) announce a strategic partnership combining chemical, mineral processing, and geophysical expertise for the mining industry.**
- **As a result of the green electric revolution, global demand for copper is set to exceed supply. Bridging the deficit is a major challenge as ores become more complex and grades decline, meaning building new mines is difficult, costly, and lengthy.**
- **Heap leach processes offer the industry low-cost extraction techniques; however, they can be relatively inefficient meaning large quantities of valuable copper remain trapped and unrecovered.**
- **BASF's chemical LixTRA™ leaching aid combined with HGI's geophysical deep well injection technologies provide a secondary recovery solution to unlock trapped copper and significantly increase copper extraction rates.**

Ludwigshafen, Germany / Tucson, USA; February 6, 2024 – Global chemical company BASF and hydroGEOPHYSICS Inc. (HGI), a leading provider of geophysical services to the mining industry, have announced an exclusive partnership aimed at combining expertise in mineral processing, hydrometallurgy, and deep well injection. The collaboration aims to optimize copper extraction in the mining industry by utilizing HGI's geophysical techniques to identify areas within the heap that currently offer poor recovery and will involve the design and implementation of a deep well injection program, incorporating BASF's novel LixTRA leach aid to facilitate a significant uplift in copper extraction.

With the increasing demand for copper driven by both traditional end-user markets and the transition to green energy, there is a strong need for new mines. However, challenges such as declining ore grades, higher costs and ESG (Environmental, Social and Governance) responsibilities have limited medium to long-term mine supply, resulting in a large looming supply deficit.

The heap leach process, which involves piling low-grade ores onto a liner and dripping a lixiviant (usually acid) over the heap to dissolve copper into solution, offers a cost-effective method for copper extraction. However, the non-uniformity of heaps often leads to areas of ore compaction and poor lixiviant permeation, resulting in suboptimal metal recovery.

HGI employs state-of-the-art geophysical technologies to characterize the structural components of the heaps, enabling the design, operation, and monitoring of targeted lixiviant injection wells. By adding BASF's LixTRA leach aid, greater ore-lixiviant contact is made, which ultimately leads to higher copper dissolution and increased metal recovery. Initial results from a customer's site have demonstrated a 20% increase in copper recovery during the trial period, prompting further testing on a larger scale to quantify the benefits.

"Technological advancements are essential if the industry is to meet the projected copper demand going forward. Using HGI's expertise to identify areas of poor heap leach performance and then targeting these areas through deep well technology and BASF's LixTRA reagent is a great example of how partnerships can drive sustainable process improvements in the mining industry," says Caren Hoffman, Vice President Mining Solutions at BASF.

Brian Cabbage, Executive Vice President, Operations at HGI, added: "Enhancing copper recovery in a sustainable and safe manner is the main focus for most of the mines HGI works with. There is a growing and continuous need for copper, especially within the green economy. Leveraging HGI's expertise in locating and enhancing copper recovery in underperforming areas in heap leach pads, with applying BASF's LixTRA reagent through our injection programs, has provided a significant boost in the efficiency of copper recovery."

About BASF mining solutions

With innovative products, global field support and industry leading technical expertise, BASF mining solutions provides sustainable solutions which increase productivity, recovery, and flexibility throughout the hydrometallurgical process of mining operations in leaching, solvent extraction, flotation, solid/liquid separation, and tailings management. Further information can be found at www.mining-solutions.basf.com.

BASF mining solutions is part of BASF's Performance Chemicals division. The division's portfolio also includes fuel and lubricant solutions, plastic additives, as well as oilfield chemicals. Customers from a variety of industries including Chemicals, Plastics, Consumer Goods, Energy & Resources and Automotive & Transportation benefit from our innovative solutions. To learn more, visit www.performancechemicals.basf.com

About BASF

At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. Around 111,000 employees in the BASF Group contribute to the success of our customers in nearly all sectors and almost every country in the world. Our portfolio comprises six segments: Chemicals, Materials, Industrial Solutions, Surface Technologies, Nutrition & Care, and Agricultural Solutions. BASF generated sales of €78.6 billion in 2021. BASF shares are traded on the stock exchange in Frankfurt (BAS) and as American Depositary Receipts (BASFY) in the U.S. Further information at www.basf.com.

About hydroGEOPHYSICS Enhanced Metal Recovery

HydroGEOPHYSICS (HGI) enhanced recovery services specialize in safely and cost-effectively maximizing recovery from existing metal mines with advanced geophysical technologies tailored to provide custom solutions to each unique problem. HGI delivers comprehensive mining solutions that include heap leach characterization to image the health of your pad, deep well injection programs, and monitoring techniques that maximize return and safety.

Our focus is optimizing productivity and efficiency in heap mining operations while ensuring environmentally responsible practices. We collaborate closely with clients to overcome the complexities of resource recovery, delivering customized solutions addressing the unique challenges of each mining project. Our innovative approach and commitment to the industry make us a leader in advancing geophysical applications in the mining sector. Learn more at www.heapsolutions.com

About hydroGEOPHYSICS

HydroGEOPHYSICS Inc. (HGI) is a full-service geophysical consulting firm providing geophysical solutions for over 30 years. HGI works closely with our clients to understand their needs and goals across many industries, including mining and pond leak detection. Our team excels in acquiring, analyzing, and interpreting geophysical data to provide high-quality solutions safely and efficiently provide in complex scenarios. HGI is revolutionizing geophysical methodologies, anchored by a deep commitment to outstanding performance and the ongoing development of cutting-edge technologies. For more about HGI, visit www.hgiworld.com

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