TOXSORB
by WFI Group

CAN EFFECTIVE PHOSPHATE REMOVAL & RECOVERY AVOID A GLOBAL SHORTAGE?

TO PREVENT PHOSPHATE DEPLETION, WE NEED TO ACT NOW!

Phosphorous, coined the 'miracle mineral' the world needs, is being depleted at an alarming rate. Some predict that at current consumption levels, known global phosphorus resources will be exhausted by 2050, yet consumption levels are not slowing down. The global food supply chain uses about 90 percent of phosphorus, mostly in crop fertilizers. We must take urgent action to limit fertilizer use and implement technologically sustainable solutions. If not, demand will continue to surge, and the damage will be irreversible.

THE NEED

Phosphorus is an unmatched vital element. It is in the dangerous situation of being not just a scarce, unique resource, but a nutrient crucial to organic life. Experts and researchers project that by 2050 phosphorus will cease to exist as a natural resource and become extinct. However, given the increase in the global population, demand will only increase. According to the US Census Bureau, phosphate use in modern agriculture spurned increased crop yields during the green revolution, thereby growing the human population from 3 billion in 1960 to over 7 billion today. Hence, should the global supply of phosphate be depleted, sustaining human and other life forms will become incredibly difficult: agronomy as we know it will end, and billions of people will most likely starve.

It is essential to make changes to phosphorus production and consumption at once to avoid irreversible outcomes. The solution? Effective phosphate removal, recovery, recycling.

THE PLAN

Despite calls for phosphorus resource conservation, the situation described above prevails. One plan is to reduce the demand for the resource, thereby reducing environmental burdens and improving future supply security. These plans include limiting phosphorus consumption to essential uses; increasing agricultural efficiency, such as optimizing land use, preventing erosion, adjusting livestock diets, etc.; increasing efficiency in the food commodity chain, including reducing food waste; assessing new potential mining zones; reducing mining losses, and enhancing phosphorous recovery and reuse from wastewater.

Efforts to recycle phosphorus in human and animal waste raises concerns about the efficiency of recovery, pathogenic organisms, and polluting

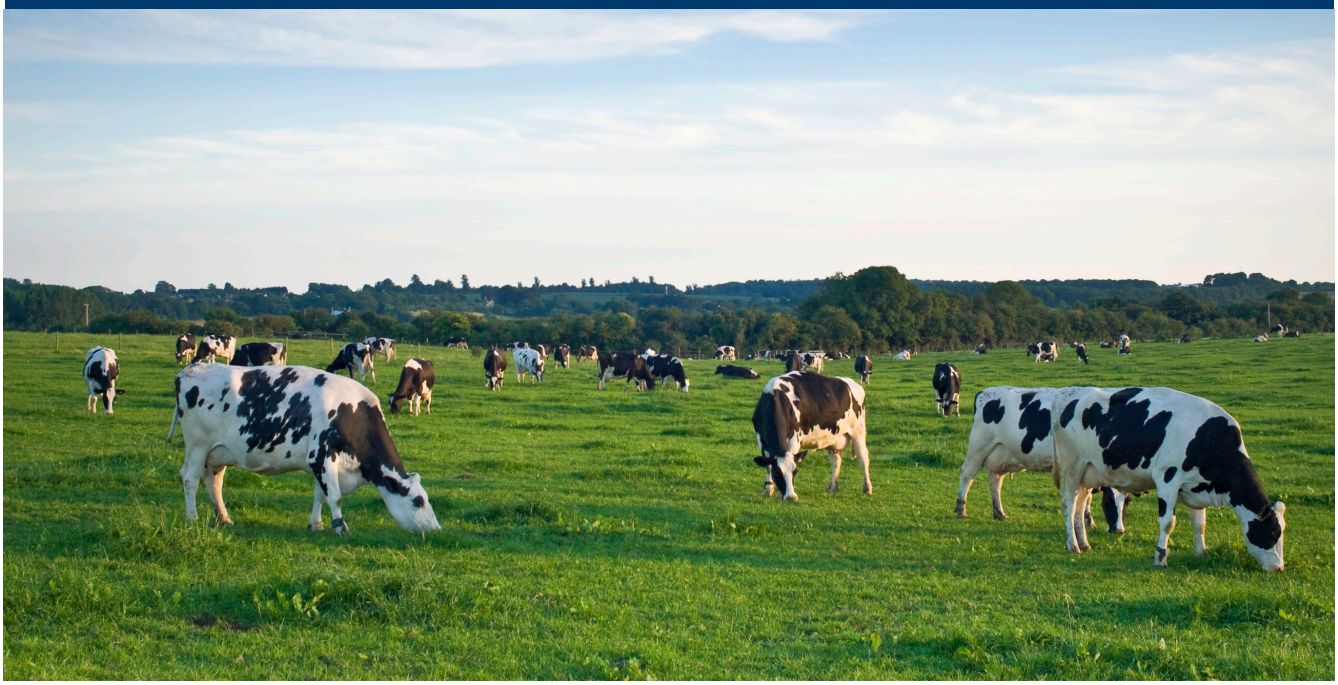
substances. Another issue is the increasingly uneven geographic distribution of phosphorus supply and demand, which has geopolitical upshots that may also affect supply security. Much work remains to manage the above concerns effectively.

THE SOLUTION

While we've established the magnitude of phosphorous for life on earth, it is also a latent environmental pollutant, which may cause the eutrophication of water bodies. The most immediate solution to eliminating depletion and ecological damage is the development and widespread rollout of extremely efficient phosphorus recovery techniques.

In a 2018 research article published by MDPI, the authors emphasize that the critical difference between phosphorus removal and phosphorus recovery methods is that the first aims to obtain phosphorus-free effluents from wastewater treatment plants (WWTPs), while the second focuses on byproducts containing phosphorus, which can then be recycled and reused.

Moreover, phosphorus recovery technologies are mostly applied to urban and industrial wastewater. Simultaneously, only a few methods are available for the livestock manure because of a lack of appropriate markets for processed manure and the ready availability of low-cost alternatives, such as disposal. So, cost-efficient solutions are also a significant factor.



A GAME-CHANGING TECHNOLOGY

TOXSORB, a technological business unit of the WFI Group, specializing in water treatment, has a proven and cost-effective way to selectively remove phosphate (PO4) and achieve exceptionally low water contamination – at sub-ppm levels. The company's revolutionary recovery technology also uses 80-90% fewer chemicals than alternatives, thus mitigating environmental impact.

TOXSORB's proprietary technology includes using chemically modified activated carbon to remove pollutants from drinking and industrial water without producing brine. This method allows the carbon to be reused repeatedly, continuously providing safe and clean water.

ONWARDS AND UPWARDS

Phosphorus resources are not unlimited, and future generations may find that these resources reflect a much more difficult situation than the one we currently perceive. Current agricultural practices waste a considerable amount of phosphorus, as just 16% of the total is used as intended. This waste is not only critical to the element's sustainability but is already causing high levels of pollution, harming water supplies, fisheries, and the ecosystem's balance.

Ofer Avidan, WFI & TOXSORB CEO, stresses that "recovery and reuse of essential minerals from water and wastewater are integral to improving the economic approach of current practices.

Changing methods and mindsets will ensure long-term environmental sustainability and enhanced public health."

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LET'S CREATE MORE VALUE FROM WATER – TOGETHER

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