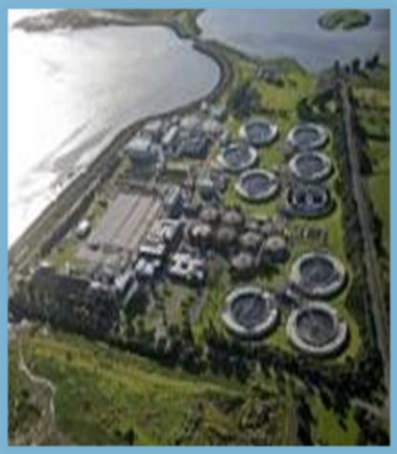
Waste Water Treatment

WASTE WATER



BIO often placed in durable Plastic

Water from Industrial and Waste Treatment facilities contains phosphorus, nitrogen and organic nutrients that often exceed the allowable discharge limits, so they need control. MetaMateria Bio-Lair and PO4 Sponge products address this need to meet regulatory limits. Non-point sources of waste water, such as storm water and agricultural field run-off, can also be treated.

MetaMateria has tested its products using water from smaller waste treatment facilities, including on-site community septic systems and municipal facilities and in industrial food processing operations. Almost all States have endangered water bodies but regulations are more stringent in States with more damaged water issues. This will become even more so in the coming decade, with new limits expected to be 10 times lower.

Bioremediation is widely used to remove organics and nitrogen compounds (ammonia & nitrates) and even biologically tie up phosphorus. Bacteria reproduce on solid surfaces submerged in water and MetaMateria's Bio-Lair products work better because there is so much additional area than available with plastic. Consequently, bacteria concentrations are at least 5 times higher. This accelerates breakdown of organics and nitrogen nutrients, thereby increasing the capacity of existing facilities by 75% or more. Less product is needed when Bio-Lair is used instead of plastic media. Operations are stabilized and sludge production reduced.

MetaMateria's PO4 Sponge product absorbs considerably more phosphorus than competitors, especially at very low concentrations needed to meet future regulatory limits or cleanup runoff water. The PO4 product represents a cost effective alternative to chemicals that are expensive and represent increased complexity in the treatment process.

Removal of phosphorus and nitrates in water from both agriculture and waste water is receiving increased attention due to problems associated with formation of blue-green algae blooms (cyanobacteria) that cause release of harmful toxins and lead to eutrophication (low oxygen) in recreational lakes and other water bodies. MetaMateria products can play an increasing role in treatment trains feeding such water bodies.

Advantages Available with Bio-Lair Products for Waste Treatment

- Increased biomass immobilized by higher amount of surface area reduces treatment time
- Plant capacity can be expanded
- Phosphorus & Nitrates reduced
- Enzymatic bacteria reduces and concentrates sludge (Improves Sludge Volume Index)

Advantages Available with PO4 Sponge for Phosphorus Removal

- High capacity for sorbing Phosphorus – less product needed
- Low effluent concentrations can be reached
- Treat water with high influents – above 100 mg/L (ppm)
- Product can be Regenerated and Reused multiple times
- Phosphate ions can be recovered through precipitation or membrane concentration
- PO4 product can also lower traces metal ions

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