ORC TECHNICAL BULLETIN #2.4.3.2

Oxygen Release Compound, ORC®

Performance in Regions of Higher Salinity

At times ORC is applied in proximity to estuaries and more saline environments that impact groundwater. Also, an inland aquifer may have high dissolved solids (TDS) values. Since metals are known to destabilize ordinary hydrogen peroxide the question arises as to the impact of a higher salt content on the release of oxygen from ORC. Also, microbial activity, particularly the presence of microfauna with respiratory rates significantly greater than bacteria, may be a factor in causing higher release rates.

Regenesis studied the efficacy of ORC in saline environments in controlled laboratory tests. ORC was placed in the standard manometers used to generate oxygen release profiles. Results indicated no significant difference between distilled water and a series of higher salinity treatments. This would be expected, since magnesium peroxide (the basis of ORC), is far more stable than hydrogen peroxide in the presence of metal ions from dissolved salts and from organic compounds.

A second experiment was conducted which introduced sand to the system as this is the true condition experienced by ORC in the aquifer. Manometers were set up again with sand added to the saline water systems; one of the treatments (ocean water + sand) was sterilized. The results were as follows:

The combination of ocean water (a salinity which is several times higher than would appear in an estuarine aquifer) and sand, catalyzed a slightly accelerated release such that the product would be expected to last about 5 months under average field conditions. When the mixture was sterilized before the addition of ORC a 10 month field lifetime was projected. Apparently, there is a demand from the more intensive biological community found in ocean water, but not so great as to contraindicate use of the product.

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