

Bioxy Research has a new management tool for remediation of high sodium- and metal-contaminated soils and wastewater streams. **Salt Binder** is an advanced treatment product combining two next generation Advanced Organic Polymers (AOPs) with bio-available calcium. This uniquely blended product possesses the following properties and functions: optimal molecular mass, active functional groups, hydrophilic and hydrophobic sites, positively and



negatively charged sites, non-ionic sites, and specific interactions between molecules themselves and organic/mineral compounds. The combination of these diverse properties and functions provides a product that utilizes multiple functions and mechanisms to detoxify, neutralize and bind, salts and chlorides with the added ability to convert a myriad of toxic metals to benign residual metals.

Why is the AOP important to the salt remediation process?

The AOP naturally binds, adsorbs, and coordinates sodium cations and chlorine anions, which allows excessive amounts of salts/chlorides to become more mobile, which eliminates the ability of the salts/chlorides to bind to soil particles, especially clay. This reaction allows sodium/chlorides to be safely leached and naturally filtered through the soil profile. Any sodium/chloride residue creates a new mineral formation resulting in sodium/chloride, cation and anion conversion into physically and mechanically bound status, eliminating salt toxicity. This process also improves the growing profile by reversing negative osmotic pressure, reducing electrical conductivity, increasing soluble organic matter, allowing proper nutrient and moisture retention, percolation, and uptake. This allows new plants to establish and regenerate soil back to a healthy and productive state. In aqueous solutions, the reactions are similar, resulting in the precipitation of most of the sodium, chlorides and metals with the remaining soluble forms being neutralized into non-toxic forms.

In soil, **Salt Binder** creates fresh soil organic matter that results in increased CEC, reduced Electrical Conductivity (EC), better water-holding capacity through osmotic pressure reduction, and soil porosity/structure.

Salt Binder's abundant hydroxyl and phenol groups naturally stimulate toxic organic and mineral pollutants decomposition into neutral soil mineral compounds such as converting Chromium VI to Chromium III. These functional groups are key to the metal complexation resulting in the binding of various metals, which protects the environment.



PRODUCT BROCHURE

How quickly will Salt Binder work and when can you expect desired results?

In most of our project sites, the application of **Salt Binder** resulted in a reduction in excess of 75% of Total Soluble Salts and over 80% reduction in chlorides within 30 days after application. While results may vary from one project site to the next, it is important to evaluate results after a minimum of six months. At such time, **Salt Binder's** full impact would be realized in terms of improving the soil structure. In most cases, the speed in which the product will work is impacted by several variables. The most important factor in designing the solution is accurate soil analysis that clearly defines the level of contamination and soil structure/type. This information will insure proper application dosage of the treatment for the desired results. Other critical factors include soil moisture after application (Limited or no rainfall will slow analytical results), proper dosing rate and application, and the establishment of accurate expectations. A reasonable expectation is to see significant results in 30 days if the recommended dosage is used.



Once Salt Binder is applied is it safe to apply seed and any other required nutrients?

Yes, the impact of **Salt Binder** is almost immediate in terms of detoxifying and buffering the soil structure. If desired, you may apply seed & required nutrients to the treated soil immediately after the application of **Salt Binder**. With the proper moisture level & rain fall, germination may be seen in as little as 2 weeks.

Application Rates

The application rate will depend on initial salt and chloride levels, final target levels, soil makeup, as well as the timeline for remediation. The best results can be expected when a complete soil analysis is provided to Bioxy Research for consultation. The anticipated use of the remediated land is also an important consideration.

For more information, please visit our website at www.bioxyresearch.com or contact us at info@bioxyresearch.com.