



Tech Brief
The Effects of Carboxx™ & H2O Rx™ on Salt
“Solutions Through Experience”
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Throughout much of the world, salt is used to melt snow and ice on roadways, sidewalks, concourses, etc. Although salt is an effective, low cost solution, it can be damaging to plants, trees and grass, resulting in unhealthy and dead landscape along roads and thoroughfares. It can be costly for government and private organizations to repair and replace this landscape and there are very few low cost prevention techniques. **Carboxx™** and **H2O Rx™** are materials that are tested and proven to reduce the adverse effects of salt on plant material of any kind.

In 1998, an extensive study was sponsored by the government and conducted in Moscow, Russia by the Moscow Engineering and Landscaping Company to develop and test ways to eliminate the adverse effects of salt on landscaping along roadways. Throughout the city, an estimated 100,000 trees died annually due to salt toxicity from road salting.



Pictures 1, 2: Trees planted along roads and contaminated by salt, salt run-off, and salty overspray.

In the spring, several test areas were identified along busy roadways and intersections with younger trees. None of these trees showed signs of budding and/or leaf formation (see Pictures 1 and 2). The soil was tested and found to have high levels of salt. In May, some of the trees were treated and others (control) were left untreated. Treatment consisted of three (3) applications of **Carboxx™**, diluted in ratio 1:1200, every 14 days. The dilution was applied to the base of the trees and bushes in a drench method.

During the treatment process, the treated trees started to leaf-out (see Picture 3) and regained normal, healthy growth. During the same period of time (42 days), the untreated trees did not show signs of leaf-out or recovery, in fact, many of the untreated trees died (see picture 4).



Picture 3: Treated Trees



Picture 4: Untreated Trees

It was noted that some of the treated trees, although they recovered, had some damage at the tops and within the body of the tree (see Picture 5). It is believed that this was due to salty overspray from vehicles once the snow melted from the salt.

Carboxx™ is a chemically, biologically and geologically active material. In the soil **Carboxx™** adsorbs and coordinates sodium cations and chlorine anions resulting in less toxicity. At the same time, **Carboxx™** makes excessive amounts of salt more mobile in terms of sodium cations and chloride anions ability to flush through the soil resulting in soil desalination and salt toxicity reduction/elimination. **Carboxx™** catalyzes toxic organic and mineral pollutants decomposition into neutral compounds. **Carboxx™** catalyzes the processes of new soil organic matter formation resulting in stable Humus formation which improves the soil’s properties and functions. **Carboxx™** also catalyzes the process of new soil mineral formation resulting in sodium, chlorine, cation and anion conversion into physically and mechanically bound status, thus eliminating salt toxicity. These processes generally require long periods of time, but **Carboxx™** accomplishes these results in short time periods, often detectable in weeks.



Picture 5: Treated trees



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In addition to salt damage, **Carboxx™** has been shown to support recovery of trees damaged by frost, insects, fungal, bacterial and viral diseases, and drought. **Carboxx™** works by increasing the rate of metabolism in the plants on the cellular level resulting in more sugars and other carbohydrate formation as well as increased vitamins and other biologically active substances formation. **Carboxx™** improves the plant's cell and other structural unit's ability to retain more water. At the same time, **Carboxx™** protects plants on the cellular level from absorption of toxic and harmful compounds including salt, while stimulating the plants ability to grow, recover from injury and development.

Though the study above was conducted using **Carboxx™**, 3 Tier and its partners knew that a better solution could be developed. Using over 20 years of experience in the Activated Humic Compound field, 3 Tier's scientist developed the next generation Activated Humic specifically to address sodium and bicarbonate issues in irrigation water and soils. This all new product is called **H2O Rx™**. **H2O Rx™** is an all new, scientifically engineered, Non – Ionic Activated Humic/Fulvic Acid blend fortified with Urea Nitrogen, specifically designed for the correction of High Sodium and Bicarbonates in both irrigation water and soil. This dual action product provides a complete management tool for the correction of poor water quality and its effects on your soil.

With other available products on the market, you must choose to treat the water with one product and the soil with another while both create potential residual affects to your turf. **H2O Rx™** is an all natural solution that will neutralize the sodium and bicarbonate issues while providing all of the benefits of **Carboxx™**, with the added benefit of specially formulated buffered nitrogen.

H2O Rx™ has many benefits depending on the application including

- Soil
 - Increased fertilizer utilization (slow release resulting in less leaching)
 - Converts clay and sandy soil to aggregated soil type
 - Increased soil water holding capacity
 - Increased bio-activity from native microbes and suppressed pathogens
 - Reduced soil compaction
- Plants
 - Reduced salt toxicity impact
 - Increased nitrogen through foliar spray without leaf burn
 - Higher crop yields
 - Increased sugar, starch, oil and protein
 - Increased stability under drought and freeze conditions



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- Water
 - Reduced salt toxicity in irrigation water
 - Binds heavy metals
 - Keeps the pH under control and stimulates bicarbonates conversion to organic matter
- Industrial Waste
 - Binds and absorbs PCB's and PAH's and stimulates their bio-chemical decomposition/ neutralization
 - Binds heavy metals

For more information on all 3 Tier Technologies products and programs, contact your local 3 Tier Distributor, or email us at info@3tiertech.com, or call 877-710-6953.