

Denver Water Potable Water pH Thoughts

1. The high pH that is anticipated (8.5-9+) should not pose a concern for landscape soils – or even potting media for outdoor containers or indoor houseplants. The pH of water itself has little effect on soil or media pH. Rather, it is the alkalinity of water (the amount of dissolved calcium carbonate) that can affect soil or media pH. Because we don't know (do the Denver Water folks know what the anticipated alkalinity level will be?) what the water alkalinity levels will be, it's hard to say what might happen with the pH change. My guess is that it will be minimal, since they are using sodium hydroxide to increase pH and most modern municipal water treatment systems reduce water alkalinity.
2. The higher pH should be of greater concern when this water is used for application of pesticides. Water pH that exceeds 7 can quickly and significantly reduce the efficacy of a number of pesticides – most notably herbicides (weed control products) and insecticides (insect control products). For example, the effectiveness of glyphosate (Roundup) can be significantly reduced at water pH greater than 6 to 6.5. Similarly, broadleaf weed control products containing 2,4-D will not work as well when applied with water that has a pH greater than 7. Most green industry professionals are aware of the importance of maintaining proper water pH in tank mixes and use water buffers to maintain optimal spray water pH. However, the change in Denver Water's pH is likely to require the use of additional buffer product – so the professional applicator should use pH test strips to determine correct amount of currently used pH adjustment products. The easy solution to this problem for the home gardener is to purchase ready-to-use products that don't require any mixing with water; the RTUs are safer to use and reduce the potential for mixing and application mistakes that can harm plants, people, pets, and the environment.
3. The higher water pH should not negatively affect plant growth (lawns, trees, perennials, vegetables, house plants) UNLESS the alkalinity (dissolved calcium carbonate) levels increase in the water. My understanding is that most municipal water treatment also reduces water alkalinity. If the pH increase in Denver's water doesn't result in increased alkalinity, then there should be no negative effects on plant growth – indoor or outdoor.
4. Until water test results are available (to better understand alkalinity levels and the amount of sodium in the water), efforts should be made to minimize application of the water to leaves of plants. Lawn grass is not a concern here, but overspray by irrigation on evergreens (pine, spruce) and sensitive perennials and annuals could cause problems for the foliage (deposits, yellowing, leaf/needle browning or loss). Similarly, water houseplants by avoiding water application to the foliage (or water using distilled or deionized water).
5. The long-term use of this water MIGHT be a concern because of the amount of sodium being applied to soil via irrigation. Once the treatment regimen has been standardized and water test levels of sodium are predictable, getting a water test from Denver Water to calculate the amount of applied sodium would allow us to predict any potential concerns with applying sodium and negative effects on soil quality. The use of this water would parallel the application of effluent/wastewater for landscape irrigation and the problems it can cause long-term: the most important one being sodium effects on permeability of soil resulting from deflocculation. This concern would be a LONG-TERM one and probably not worth talking about now – but something we should consider once we can get some water tests after the change has been made in water treatment.

So...in summary:

- The higher pH in itself should cause no problems for plants (indoor or outdoor) and the soils or media in which they are growing – but minimize, if possible, overspray of irrigation (or water application to leaves of houseplants) to leaves/needles of landscape trees, shrubs, vegetables, and garden flowers.
- The higher water pH can be problematic when using it to mix and apply pesticides and some fertilizers – causing them to be less effective or to precipitate out in the spray mix water. The appropriate water pH buffer or adjustment product should be used to adjust spray water pH.
- Because sodium hydroxide is being used to change the water pH, the long-term effects of irrigation with higher sodium water on soil quality should be assessed.