Joint Committee on Drinking Water Treatment Units (DWTU)

DRAFT Annual Meeting Summary

May 15, 2024

PFAS Cation Water Chemistry Discussion Excerpt

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TAB 3

PFAS

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D. PFAS Cation Water Chemistry (DWTU-2024-11)

Motion: Undertake the PFAS cation water chemistry issue as an action item in the PFAS Task Group. **B. Tallon** motioned; **Z. Gleason** seconded.

Discussion:

L. Gottlieb gave a **presentation** on the issue of hardness fouling in water treatment, specifically addressing the precipitation of magnesium and sodium salts from water treatment chemicals. He highlighted the challenges in testing these chemicals due to their rapid dissolution or significant loss during the standard three-day extraction test, which does not accurately represent their long-term behavior in water systems.

He suggested that the current NSF standard for testing these chemicals might not be appropriate and proposed exploring alternative testing methods that better reflect the steady-state dissolution and dosing of these chemicals in water systems. The changes would achieve a more balanced cation ratio and address precipitation issues in ion exchange resins.

Specifically, his issue paper suggested changing the cation mix of the water makeup by adding calcium in a 2:1 calcium to magnesium ratio (similar to water softening industry test methods for filters prone to hardness fouling) and limiting total hardness to less than one grain per gallon. For soft water, he suggested using calcium chloride, magnesium sulfate, sodium sulfate, bicarbonate, and sodium chloride.

G. Hatch said that you have to be careful with cation concentrations, especially calcium and magnesium, to prevent precipitation and clogging, which in turn creates a pressure drop. He agreed the issue should be examined for ion exchange and carbon block technology, which can form gel on the surface and clog quickly.

R. Regunathan said he did not recall how the current protocol was developed, and that the concentrations need to be examined, especially sulfate.

L. Gottlieb said perhaps the previous focus had been on adjusting salts for anions, not cations.

G. Hatch said the test water should be pretty similar to the VOC reduction test water.

G. Hatch and **R. Regunathan** agreed with the issue paper's proposed alkalinity levels.

G. Hatch said the current levels of magnesium in the current standard are high and should be lowered.

L. Gottlieb agreed, saying the standard provides a second methodology to replace 50% of the magnesium salts with sodium, but there is still a total absence of calcium. This imbalance of calcium to magnesium is not representative.

Vote: All in favor.

Motion passed.

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