

## Stratification Concerns in Water Storage Tanks

*Thom Tackman; Certified Water Operator*

As spring and summer approaches, stored water flow and temperature will gradually increase in all water storage tanks whether they are below ground or elevated. Increase in the water temperature typically results in chemical and thermal stratification along with an increase in biofilm growth and a decrease in the chlorine residual. The sun warms the outside of the storage tank and the heat inside increases the corrosion of metal above the water line in the headspace of the storage tank. The system operator cannot control the sunlight or ambient temperature but with a robust active mixer, they can eliminate chemical and thermal stratification and reduce headspace temperature.

When water in the tank is completely mixed, the mixing action from an active mixer will bring the colder and fresher water to the top of the tank potentially dropping the temperature, as well as completely eliminating chemical stratification. The active mixer will help reduce biofilm build-up that increases TTHM and HAA5 levels within the tank and consumes the chlorine residual.

Without a mixer, thermal stratification will create a separation of the warmer water from the colder water and allow for a temperature separation that can be seen externally on a water storage tank. Temperature testing can confirm thermal stratification. Chemical stratification is another concern that can be verified by sampling the top and bottom of a storage tank or by using a sump pump (that is properly disinfected) to verify the chlorine residual at multiple levels within a water storage tank.



*BEFORE: Thermocline Line  
Visible on Outside of Tank*



*AFTER: Thermocline Line Eliminated  
with Kasco's Certisafe™ Tank Mixer*

Kasco's CertiSafe™ Tank Mixer is an efficient and effective active tank mixing solution that will keep water tanks thoroughly mixed from top to bottom. These mixers have shown to reduce chlorine stratification to a 0.2 PPM difference in the complete volume of the water storage tank.

"Our joint customer case studies confirm that the addition of a Kasco CertiSafe™ Mixer is by far the most efficient and cost-effective way to improve water quality in a water storage tank," said Lucy Allen, Kasco's Municipal Business Development Manager.

Thermal or chemical stratification in water tanks is almost a certainty without the help of a powerful, active mixer. Keep your drinking water healthy and storage tank structure protected by utilizing a mixing method that eliminates any possibility for stratification.