



**AQUAMETRICS**  
ENVIRONMENTAL

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# PHA<sup>®</sup> MEDIA STABILIZER

Easy, Low Impact pH Adjustment

Introducing PHA<sup>®</sup> Media Stabilizer, a new pH adjust media for optimum removal of anions like Arsenic, Fluoride and Cyanide. As pH changes, the charge associated with the arsenic anion also changes. The Arsenic anion carries a single negative charge at or below pH 7, but it loses a proton at higher pH, resulting in a doubly charged anion. The singly charged anion is adsorbed more effectively from a solution than the doubly charged species.



In a similar manner, the charge state on the surface of the adsorbent varies with pH. Titanium oxide has a positive surface charge below a pH of 5, and a negative surface charge at higher pH. Likewise, an iron oxide adsorbent has a positive charge below a pH of ~7, and a negative charge at higher pH.

If pH is below the  $pH_{pzc}$  value, the surface charge of adsorbent would be positive, hence the anions can be adsorbed. When pH is over the  $pH_{pzc}$  value, their surfaces become negatively charged and incompatible for adsorbing anionic components.

This variation in adsorbent surface charge can explain why the adsorption capacity for arsenic is so sensitive to pH changes in the common drinking water range of 7.0 to 8.5.

It is easy to see how both effects — the doubly charged arsenic anion and the negative surface charge of the adsorbents — could work together to dramatically reduce efficiency at higher pH.

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