

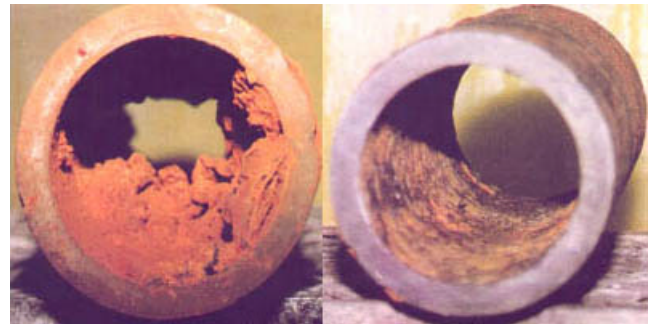
Smart News from *Aqua Smart, Inc.*

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SeaQuest, it's SQ547 that makes the difference

Everyone asks why SeaQuest is different than all other orthopolyphosphate blends recommended as drinking water corrosion control sequesterants. The answer is SQ547, a proprietary technology of Aqua Smart, Inc. Everyone wants to know, when other vendors say they have a product that works the same as SeaQuest and cheaper, how is that possible? The answer is that it's not possible. So you ask, so what. These answers open up a very interesting analysis of polyphosphate chemistry.

The key word in the above questions is when the other vendors say they have the same product and "cheaper". This automatically sets up a red flag confirming the polyphosphate portion (and perhaps the orthophosphate portions) of their products is not made domestically, that is, within US borders. There is an established pricing for polyphosphates domestically manufactured. Foreign sources of polyphosphates (such as those from Mexico or China for example) sell for 40-50% less. Why? Number one, they want to be very competitive and switch all the business from domestic sources to themselves and two, by simplifying their manufacturing processes (cutting costs in order to offer "cheaper" pricing), they end up making a product that is inferior for the drinking water market...even though it might suffice for other markets.

What is it that makes foreign manufactured polyphosphates inferior? Domestic (US) producers have over 100 years of manufacturing and application experience where the foreign sources are only trying to copy and make what they think is a proper copy. The reason they cannot succeed is often attributable to the black art of manufacturing polyphosphates. However, if you analyze such products chemically, you find that the foreign products have a much wider and larger distribution of polymeric size. Why is this important in drinking water applications? Because when

it comes to sequestration of metals in solution (iron, manganese, calcium, and magnesium), the larger the polyphosphate molecule the less effectively it sequesters.

Well, that sounds exactly opposite to what one would expect. We always learned that as such polymers get large, they have more sites to do the sequestering of these minerals in solution. But, what the manufacturers of these foreign supplies do not realize [and what (US) domestic manufacturers know from all their experience] is that when sequestering sites begin to get filled, they will block other sites. In other words, the large foreign polymers actually sequester less minerals because of a concept in chemistry called "steric hindrance". It simply is too big. Domestic (US) manufacturers go through great pains to make sure that the molecular distribution of polymer size is exactly what is needed in order to optimize sequestration performance.

Aqua Smart, Inc. has taken this even farther. By providing its unique SQ547 technology (developed over 18 years of research), Aqua Smart has focused even on the more appropriate molecular distribution sizing to improve upon what (US) domestic manufacturers already know. This process is not cheap, but is the reason why SeaQuest is different, why it works better, and why it works more efficiently than other vendors' products.

What is the end result of all this? One should never ever purchase a orthopolyphosphate blended product for drinking water corrosion control sequestration without absolute written verifiable confirmation that all the raw materials are manufactured domestically in the US. And, in order to insure maximum performance of such a product, one should always buy SeaQuest—not the cheapest, but simply the best.

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Huh!



A very interesting article recently appeared in the AWWA Journal magazine dated July 2002 surveying US Utilities on phosphate inhibitors along with surveying much of the published literature over the years from many different sources on this subject going as far back as 1941 to present. Listen to the findings summary, "In many cases, inhibitors were found to decrease corrosion, although inhibitor action appeared to be highly dependent on water quality and other factors. Under some circumstances, these inhibitors significantly worsened corrosion. In particular, polyphosphate was shown to increase soluble lead and copper concentrations through complexation, and it was unclear whether additional benefits resulted from dosing zinc orthophosphate inhibitors. Numerous studies extolled the virtues of phosphate inhibitors for controlling iron corrosion or red water. However, several recent studies found that polyphosphate could increase red water, tuberculation, and iron weight loss for many water qualities."

Huh? Which is it? Do they work or don't they work? What difference does it make about water quality? Why would anyone contemplate buying a product whose performance solely depends on having a certain water quality consistent with the product of choice...i.e., if the water quality is not correct, than the product will not work? Why would anyone sell such a product? Do the products work sometimes and sometimes they don't work? Do the products work for a while and then stop working?

All these are very valid questions to ask if one were running a water utility looking to solve water qual-

ity and related corrosion problems. With all do respect to all those who study such matters and publish their work for the AWWA over these many years, there is little attention paid to the suppliers' side of the matter. As noted in the lead article of this issue of Smart News, we are seeing a large number of suppliers of such phosphate products vying for foreign supplies of raw materials trying to become more and more competitive in order to win the proverbial bid. To such an extent, these vendors (and it's all of them) now make their formulations (which may have shown some good in the past) with less expensive raw materials that simply can not perform as those made domestically in the US (for the reasons already noted in the first article). We submit that this is why the products work sometimes and sometimes not. This is why the products appear to work only in certain water qualities. This is why the products sometimes increase corrosion and sometimes reduce corrosion. This is why the products sometimes increase lead and copper and sometimes reduce lead and copper. This is why the products sometimes reduce red water and sometimes increase red water. This is why the products sometimes protect cement coatings and sometimes attack cement coatings. One only has to look no farther than their back yard for the answer.

There is only one product that guarantees (in writing) use only of domestically (US) manufactured raw materials and then even improves upon that with SQ547 technology...SeaQuest. SeaQuest consistently performs independent of water quality, independent of pH, independent of the presence of calcium and/or magnesium, independent of time/temperature, and independent of anything.



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On line

a) Two more SeaQuest customers recently confirmed again significant reduction of THM levels by lowering pH of their finished water supplies. The number of SeaQuest users taking this route is increasing steadily. Getting off pH control eliminates the need for expensive and corrosive sodium hydroxide, labor and equipment intensive lime, or hard to get into solution and expensive sodium carbonate (soda ash). Getting off pH control results in the greater presence of the more stable-more potent hypochlorous acid and lowers the presence of the less stable less-potent hypochlorite ion. This in turn provides more stable disinfection levels in distribution so the total chlorine input can be lowered thereby lowering THM formation. It's just that simple.

b) Recently, a SeaQuest user wrote, "In March of 2002, we started using SeaQuest to our water during the treatment process. We are very pleased with the results that your product provided us. This product has enhanced the overall capabilities of our water lines. For example, consumers at the far end of the water system had very little water pressure. The main feed was 4" and the line to their house was _". After one month of using SeaQuest the consumers wanted to know what we had done to the water lines, because they now had enough pressure to take a good shower, where as in the past they stated that the water from the tap was little more than a drip."

c) Another customer writes, "The Bureau's interest in SeaQuest developed because of an excessive scaling inside the sodium hypochlorite feed line at the Bureau's Hemlock Filtration Plant. The scale, principally calcium carbonate, developed after the 'carry water' mixed with the sodium hypochlorite (15% active ingredient). The severity of the problem was such that it became difficult to maintain a consistent hypochlorite feed, and in one instance, feed was interrupted because of a plugged check valve.

The City started using SeaQuest in late November. The SeaQuest is added to the hypochlorite storage tank at a dosage of 13 pounds per 6500 gallon of hypochlorite. Since we've started using SeaQuest, scaling has not been a problem. I wish all water treatment problems were as quickly and effectively solved."

d) Yet another customer writes, "After review of our operations, this letter is to advise you that your material 'SeaQuest' is working better that we thought it would! Our normal operation is to flush the distribution system two (2) times per year. Because the major part of the system is composed of wrought iron and unlined cast iron. These materials present problems with red water complaints each spring and fall as the water temperature changes. We get about fifty (50) complaints during this time. Since we changed to "SeaQuest" we have received only one (1) complaint!"

e) Finally, another customer writes, "This correspondence is in regard to your product, SeaQuest, that we use in manganese sequestering and corrosion control. With this product we can apply it in a wide pH range that is not the case with a similar product.... Our finished water ranges can go from a 6.5 to 5.7 and the product does not fall out of solution with the lower pH's."

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Thought of the month

"A biofilm can be thought of as a home for bacteria. If this home isn't present, then it's very difficult for a high number of single species to survive." Keep your system's distribution piping biofilm free with SeaQuest.

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Anyone know the answers?

- 1) What is the oxidizing species and chemistry in sodium hypochlorite?
- 2) What is the predictive value of corrosion indices, i.e. Langlier index, saturation index, Ryznar index, etc.
- 3) True or False: Lead exposure is associated with interference of red blood cell formation, anemia, kidney damage, impaired cognitive performance, delayed neurological and physical development, elevations in blood pressure, and cancer.

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Over there

One of our SeaQuest distributors from Europe has come across a unique market for SeaQuest. He has discovered there are major problems with institutional and public indoor swimming pools that range from clarity of water to scale and corrosion problems of the circulation plumbing to the point where certain such pools were designated as condemned and scheduled for closure. After starting SeaQuest treatment using an injection methodology developed on site, all the problems reversed themselves to the point where circulation, corrosion, and scale are no longer issues and those pools designated as condemned now can be reopened as well as greatly reducing maintenance of operating the pools during scheduled shut down periods.

Another distributor in Europe recently submitted a sample of SeaQuest to a specialty company who found use of SeaQuest retards fires of their treated textiles.



The SeaQuest is able to sequester calcium involved in the application chemistry and the process water so well, that when fire does strike the treated textiles, it allows release of a proprietary Lewis acid that puts the fire out. Without SeaQuest, the presence of calcium (in the application chemistry and water) impeded the release of the Lewis acid lowering the efficacy of their fire retardant treatment. To date, the company notes SeaQuest as the best product they ever tested. In the future, all fire resistant textiles may carry the SeaQuest treated name as guaranteeing efficacy, just as it does in the drinking water

Anyone know the answers:

- 1) The Cl^+ of the HOCl picks up two electrons from the substance (or bacteria) being oxidized, then becomes reduced to a chloride radical Cl^- .
- 2) In general, indices based on calcium carbonate do not show any predictive value for corrosion or metal leaching.
- 3) True.

Editor's Note:

We have attempted to provide our readers with topics we believe to be of interest based on numerous questions and responses which have been posted on the AWWA Discussion Forum, Water Technology Forum, and other drinking water forums. We welcome all responses, recommendations, and suggestions on related topics you wish to see discussed.

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