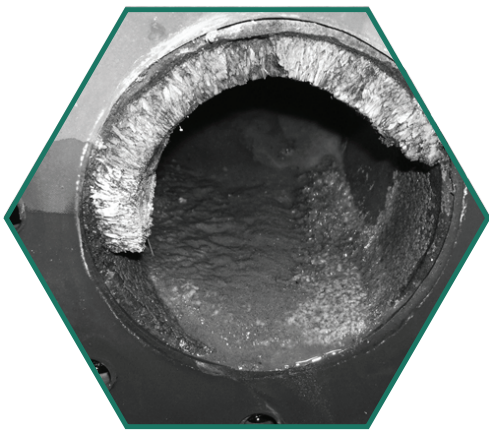


A common challenge for wastewater treatment plants is Struvite which is a hard compound of made up of Ammonium, Magnesium and Phosphate (AMP). Struvite is a phosphate mineral with the formula: $NH_4MgPO_4 \cdot 6H_2O$ that can quickly get out of control.

When the conditions are right, the Struvite will rapidly form crystals that spread throughout a pipeline forming a concrete-like crust. It is most commonly a problem in dewatering filtrate or lagoon decant streams and in spots with local turbulence, such as pipe elbows, mixer blades and pumps.

A solution key to the continued system functionality at WWTPs is FreshAWL[®] Z-AMP[™] which is specifically designed to prevent the bonding of the Ammonium, Magnesium and Phosphate.



This Z-AMP photo shows the results of a Struvite encrusted pipe after treating the bottom half in a Z-AMP solution bath. The treated portion is completely free of Struvite and successful results occur within a 4-24 hour time frame.

Z-AMP will remove the Struvite eliminating the need to employ costly and dangerous equipment for

augering or power blasting which can lead to high risk breakage.

Vivianite is a hard, dense blue-gray precipitate of hydrated ferrous phosphate ($Fe_3(PO_4)_2 \cdot 8H_2O$).

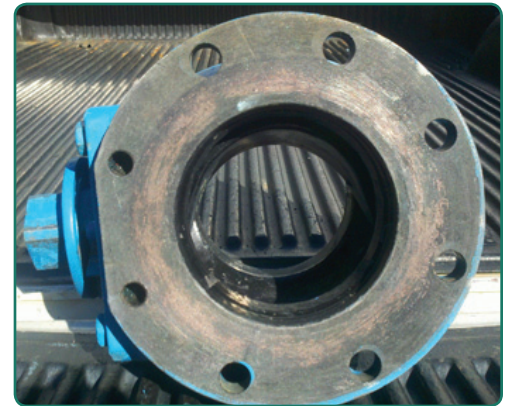
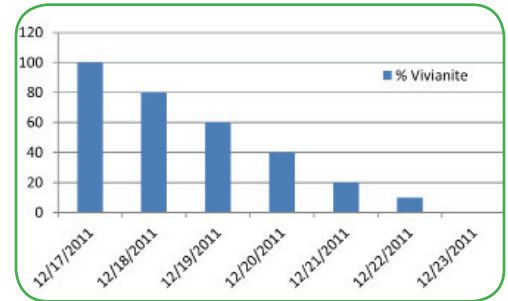


Dewatering of anaerobically digested sludge (a combination of primary and waste activated biosolids) can often result in scale formation caused by the precipitating of vivianite as seen in the above pictured check valve or struvite.

The release of biologically retained phosphorus under the anaerobic conditions in the digester causes the digesting sludge to reach a saturated condition with respect to phosphate. Exposure to air and turbulence during sludge dewatering strips out carbon dioxide, resulting in a slight rise in the pH, which is enough to lead to the phosphate precipitation.

The following graph and photograph of the results of the vivianite encrusted flow valve after a five (5) day treatment in Z-AMP bath at a 4:1 dilution in H_2O .

The Z-AMP solution can be run through the closed off plant section to be treated with a circulation pump.



- Z-AMP is a powerfully safe solution for the complete deconstruction of hydrated Ferrous sulfate or Vivianite.
- Z-AMP is a nonhazardous solution that completely and safely dissolves the Struvite into reclaimable ammonia gas plus magnesium and phosphate for use in agriculture or for fertilizer purposes.
- Z-AMP is also ideal for the treatment of boiler systems.
- Z-AMP will effectively perform in freezing temperatures.

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