

Corrosion Control – Questions	Responses
<p>Effect of zinc on waste water treatment plant – will this affect the effluent coming out of the waste water treatment plant and thus affect Hudson River water quality. What effects if any will zinc have on the County owned-Ossining sewer plants processes where Croton’s sewage is treated. County personnel should be consulted prior to chemical additives being used.</p>	<p>Meena George (248-2505 x356) at the DEC in Tarrytown was contacted regarding possible water quality impacts from adding zinc orthophosphate to the water supply; she contacted DEC Albany and called back. She said that there is no phosphorus effluent limitations for discharges into the Hudson River and indicated that a phosphorus level of 1.0 mg/l would not be a problem due to the dilution effect of the Hudson River.</p> <p>Mike Coley (813-5412) at WCDEF was contacted regarding possible water quality impacts from adding zinc orthophosphate to the water supply.</p>
<p>Have we reviewed any scientific studies on this additive</p>	<p>Adding Zinc orthophosphate to the water supply will result in very low levels of zinc, chloride, and orthophosphate in the water. The EPA regulates zinc and chloride in water supplies as secondary contaminants for taste reasons and not for health reasons.</p> <p>Zinc and orthophosphate are commonly consumed as part of a balanced diet. The National Academy has the following recommendations:</p> <p>Phosphate - The National Academy of Sciences has recommended 700 milligrams of phosphorus per day in adults ages 18 years and older, including pregnant or breastfeeding women.</p> <p style="text-align: center;">Table 2: Upper Levels for Zinc for Infants, Children, and Adults</p>

	Age	Infants and Children	Males and Females	Pregnancy and Lactation
	0 to 6 months	4 mg		
	7 to 12 months	5 mg		
	1 to 3 years	7 mg		
	4 to 8 years	12 mg		
	9 to 13 years	23 mg		
	14 to 18 years	34 mg		34 mg
	Ages 19+		40 mg	40 mg
Studies should be made available in the Village office for residents to review	<p>We have no specific health studies. The EPA has established a level of 5 mg/l for zinc for taste reasons. Many phosphate and zinc containing food additive are on the FDA list of substances generally recognized as safe in foods</p> <p>Those interested can contact NSF at their free consumer information hotline at (1-877-867-3435) or the EPA or FDA for more information.</p>			

Referendum	Legal determination needed.
Report on sicknesses in Maui	SOME information reported in paper –appears to be operator error, not the additive. Corrosion control additives are used in water systems through out the nation.
MSDS report talking of health hazards, leaks, and spills	The MSDS is for actual bulk additive and has specific health and safety information for handling the actual additive. Like any concentrated additive proper safety equipment needs to be worn by personnel dealing with the leak or spill. The zinc orthophosphate is a product of the mixing of a mild acid (phosphoric acid) and zinc chloride and requires specific protective equipment and clothing to prevent acid burns. The additive is non-flammable.
Alternatives to zinc orthophosphates	Other alternatives were listed in the Chazen corrosion control report. However, zinc orthophosphate was determined to be the best additive to control iron, and lead corrosion.
Health and safety of employees handling additive	The health and safety concerns are listed on the MSDS, see response above about MSDS. The proper protective equipment and clothing will be available to the water department personnel. Also, it is planned to have the additive delivered in bulk to fill small storage tanks at the water plant. The bulk deliveries will reduce handling by water department personnel and therefore reduce any possible health and safety concerns.

<p>Has Westchester County experienced any problems with its waste water treatment plants</p>	<p>Mike Coley at WCDEF was contacted and he is waiting for a response from DEC. Mr. Coley indicated that WCDEF monitors for total and orthophosphate at the Ossining WWTP but there is no effluent limitation. The average levels from 2003-2006 are as follows: influent total phosphate = 3.74 mg/l, effluent total phosphate = 1.56 mg/l, influent ortho phosphate = 2.29 mg/l, effluent ortho phosphate = 1.22 mg/l.</p>
<p>Will the zinc component at 10% solution precipitate out of the water supply possibly adding another heavy metal to residents' water.</p>	<p>Most of the zinc will bond with the orthophosphate in solution prior to the additive being injected into the water supply. At the recommended dosage, the zinc concentration in the distribution system will be less than 1 ppm (zinc is approximately 7 ½% of the undiluted additive) and it will not precipitate from the water at the normal pH of the water supply. The pH measured at sampling in 2005 indicated an average of about 7.25. The pH would have to rise to greater than 7.6 for the zinc to precipitate. Adding the ZOP will slightly reduce the pH.</p>
<p>Copper piping has a natural ability to inhibit bacteria growth, with residents piping lined by the zinc orthophosphate compound will extra chlorine be required to disinfect the water supply to compensate for the loss of the bacteria-inhibiting properties in residents' home piping.</p>	<p>The use of the corrosion control additive will result in reduced corrosion rates and therefore lower the chlorine demand in the distribution system. The lower chlorine demand will result in higher chlorine residuals and therefore better microbiological safety. All copper service lines (except brand new lines) have numerous scale compounds on their surface (scale compounds will develop on new lines with time), these scale compounds create a barrier between the water and the pipe disrupting any associated biocide effect from metallic copper. Microbiological control in the water supply is maintained by the proper chlorine residual.</p>

<p>What quality control measures will be necessary to ensure the zinc orthophosphate compound is delivered in the correct proportions prior to being added to Croton's water supply.</p>	<p>The additive is fed into the water with a highly accurate flow proportioned chemical metering pump. These pumps are highly reliable positive displacement chemical feed pumps used throughout the world for feeding water treatment additives. Daily testing will also be performed to measure the orthophosphate residual in the water supply and zinc levels will be tested monthly.</p>
<p>What other mitigation is available to control corrosion in resident's homes.</p>	<p>Homeowners could install any number of point of entry or point of use water treatment systems. This is not good public policy with respect to water treatment since it relies on each home owner installing the proper system and then performing the proper maintenance on the system. POE and POU treatment systems will not reduce the corrosion of the municipal water mains.</p>
<p>Is the village testing protocol for lead and copper in residents' homes and businesses balanced and representative of the entire water supply system?</p>	<p>The testing performed by the Village is per the EPA lead and copper rule and NYS Sanitary Code. The testing is not balanced (as dictated by the regulations) however skewed towards those homes which would have higher lead levels. The testing is representative of the homes with lead solder.</p>