

More than Meets the Eye – Your Corrosion Control Treatment May Not be What You Think

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In 2018, Newark uncovered that the corrosion inhibitor they had been using for over 20 years was not the dominant mechanism controlling lead corrosion in the Pequannock Gradient's distribution system. While one might think that this was an isolated case, recent full-scale experience and research show that Newark is actually just one example where a utility's dominant corrosion control mechanism within their pipe scales is different than what they believe is providing them protection against lead corrosion. A 2018 study by Tully, DeSantis and Schock showed that of the 22 utilities evaluated, the pipe scales analyzed in only 9 systems matched what was believed to be the controlling corrosion control mechanism based on corrosion inhibitor chemical dosing and desktop solubility modeling.

It is of critical importance that utilities understand their baseline corrosion control mechanism prior to making any changes to their treatment or sources – whether to maintain existing scales by avoiding inadvertent or seemingly unrelated changes or to deliberately develop a plan to convert existing scales to another form of corrosion control if necessary to obtain better control of lead.

This presentation will provide guidance for utilities to confirm their baseline corrosion control treatment and evaluate alternatives. Using the Newark case study, it will walk through the steps taken by the research and engineering team to diagnose the issue, identify appropriate treatment alternatives, and implement modifications to optimize corrosion control treatment. The study included a combination of desktop solubility models, evaluation of historic lead compliance data, substantial sequential sampling, lead pipe scale analysis, and a comprehensive pipe loop study. No single one of these analyses could have provided the whole story, instead the combination painted the picture of the underlying corrosion control mechanism. Using this information, an optimization strategy was developed to return Newark to compliance. This presentation will present the results of the study and on-going monitoring of the transition process to orthophosphate-based scales, the selected corrosion control treatment based on the results of the study.