



Environor
SOLENO GROUP MEMBER

Copper Reduction in a Commercial Drinking Water System

Context & Problem Statement

An IGA grocery store is supplied with drinking water from a well. The water treatment system is primarily designed to reduce water hardness and manganese levels, which are present in high concentrations.

The distributed water consists of approximately **90% softened water** and **10% unsoftened water**. However, **after passing through the water softener and a 5-micron prefilter**, the water became more aggressive toward the facility's infrastructure.

Since the building's internal plumbing system is primarily **composed of copper piping**, significant corrosion issues were quickly observed.

The facility was facing several water quality and corrosion-related issues:

- Copper concentrations exceeding the regulatory limit of 1 mg/L
- Blue staining on porcelain fixtures
- Accelerated corrosion of copper piping
- Frequent replacement of water heaters
- Increased water aggressiveness following treatment

This situation was affecting both the infrastructure and the overall stability of the internal water distribution system.

SOLUTIONS & RESULTS

To address the issue, Environor **implemented a corrosion inhibitor** and provided rigorous dosage monitoring to optimize treatment performance.

The project included:

- Installation and gradual adjustment of the corrosion inhibitor
- Regular hot and cold water analyses
- Technical monitoring over a three-year period
- Continuous dosage optimization based on analytical results

At the beginning of the project, the inhibitor dosage was set at **9 mg/L**. It was subsequently optimized and gradually reduced to between **6 and 7 mg/L** while maintaining effective corrosion control.

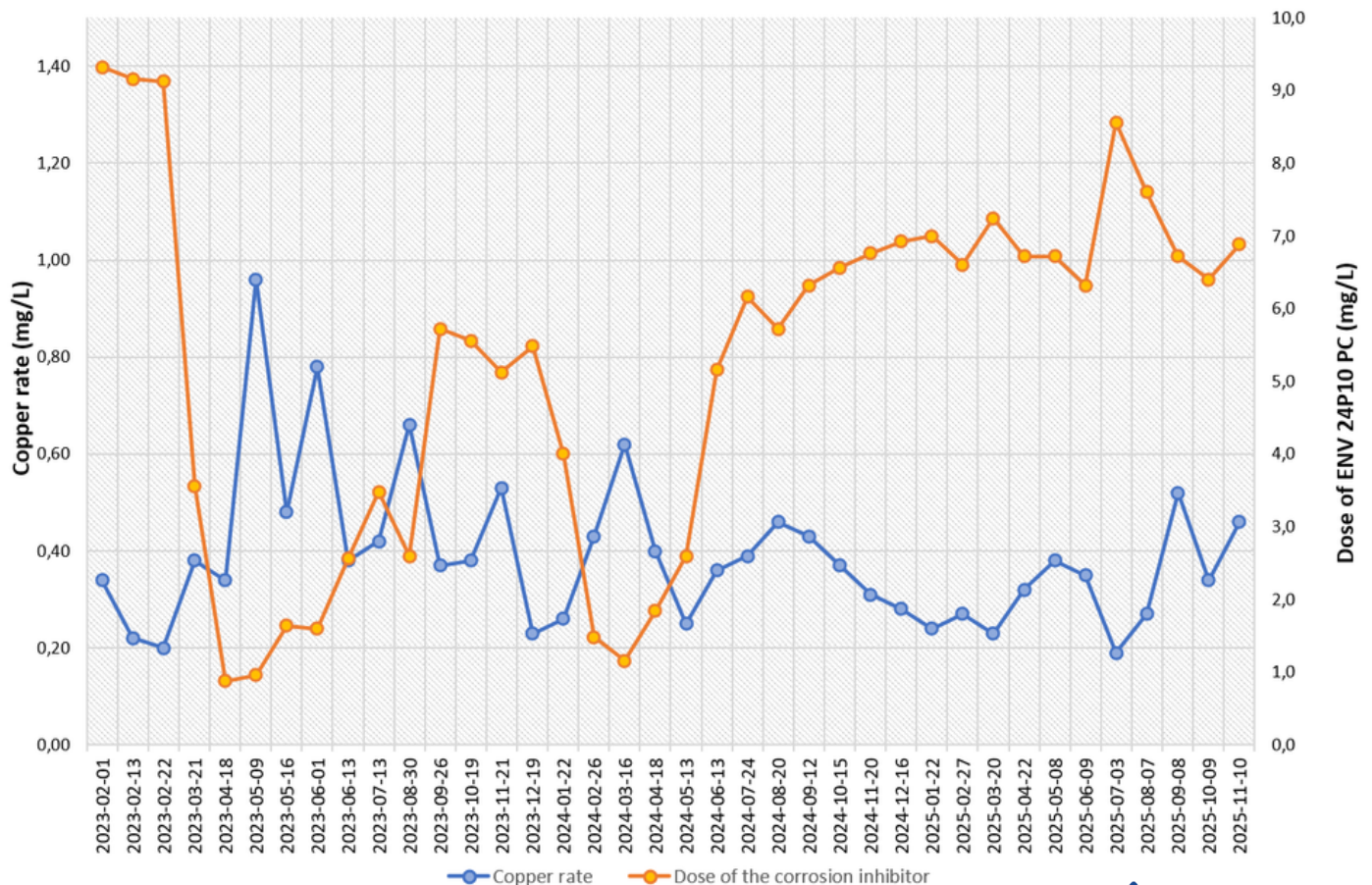
Prior to implementing the solution, copper concentrations exceeded the regulatory limit of **1 mg/L**.

Following the addition of the corrosion inhibitor:

- Copper concentrations decreased to as low as 0.23 mg/L
- Hot and cold water analysis results remained below the regulatory limit
- The stability of the water distribution system improved significantly
- Copper leaching into the water was reduced

Monitoring also demonstrated a clear correlation between inhibitor dosage and copper concentrations: when the dosage was reduced too much, copper levels increased.

Temporal evolution of the copper rate and the dose of the corrosion inhibitor



BENEFITS

Through this intervention, Environor enabled the client to:

- 💧 Reduce copper concentrations in drinking water
- 💧 Stabilize the internal water distribution system
- 💧 Minimize the effects of corrosion on equipment
- 💧 Protect infrastructure over the long term
- 💧 Maintain more consistent and compliant water quality

This case study highlights the **importance of rigorous technical monitoring** and **proper dosage optimization** to ensure effective corrosion control in drinking water systems.