



BACKGROUND

A city located in the midwest (United States) exceeded the **lead compliance rule of greater than 15 ppb**. There was **discoloration** on primarily plumbing fixtures, and long hydrant flushing times **greater than 30 minutes**, resulting in USEPA mandated monitoring of lead and quarterly testing of lead dissolution throughout the distribution system.

The city was using three wells located in confined deep aquifers and treating an average of approximately 4000 m³/day (1.1 MGD) to over 2000 connections or a population of 7500. All three well systems have radium removal systems using a Hydrous Manganese Oxide process filtered through anthracite/sand mixed pressure filters. All filtered water is fluoridated, chlorinated and pumped directly into elevated storage prior to being sent to the distribution system. All wells are monitored and controlled by a computer system at the plant for maintaining consistent water pressure.

Water Quality Data:

| | |
|------------------------|---------------------------|
| Iron: 0.1-0.5 mg/L | Manganese: 0.01-0.05 mg/L |
| Hardness: 280-340 mg/L | Temp: 13° C (55.4° F) |
| pH: 7.3-7.5 | |

EVALUATION

Carus evaluated the water quality and considered the lead leaching as they evaluated the proper product selection for this municipality. Carus recommended a 6-month trial using liquid CARUS™ 8500 water treatment chemical at 4.0 mg/L as product or 1.5 mg/L as total phosphate (34.7 lbs/MGD or 4g/m³).

CONCLUSIONS AND OBSERVATIONS

Within 60 days, the Superintendent observed color control on plumbing fixtures, and first draw lead samples tested were all within 95% of 15 ppb **meeting the USEPA regulation**.

One year later: The first draw lead samples taken were all less than **7.5 ppb, well below the 15 ppb action level**. The hydrant flushing times were **reduced from 30 minutes to less than five minutes** maintaining color control in the distribution system.

