ALPS - ACCELERATED PIPE SCALE-BUILDUP

Tech ID: 31744 / UC Case 2020-071-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

Accelerated Pipe Scale-buildup (ALPS) is a cost-effective electrochemical method meant to prevent lead leaching into the drinking water from lead-based water distribution systems by accelerating the formation of a protective scale made out of lead corrosion products within the pipes. This technology involves inserting a phosphate-rich solution and a conductive wire into lead pipes, and then connecting the wire and the pipes to a power source. By using a low DC voltage of around 1 V, the lead pipes rapidly corrode, generating lead corrosion products, including lead phosphates and lead dioxides, which become attached to the pipe surfaces, preventing further leaching of lead. After the treatment is completed, the system is disconnected and the wire is removed.

SUGGESTED USES

This novel technology provides building owners or water utilities with a rapid, inexpensive and in-situ solution to the problem of lead leaching from lead pipes into the drinking water by accelerating the formation of an insoluble scale within the pipes. Licensed local or regional plumbing contractors working for building owners or for water utilities will deploy the system where needed, resulting in a rapid decrease of lead leaching rates and lowering the lead content of the water to levels below 15 ppb.

More than 5,000 public drinking water systems in the United States are currently in violation of lead standards for drinking water, harming more than 17 million people.

ADVANTAGES

This technology provides a rapid, affordable, and effective solution for water utility system managers and building owners to bring infrastructure into compliance with the Lead and Copper Rule, and protect vulnerable communities suffering from lead leaching in their water distribution systems.

- It provides protection against lead leaching in less than 24 hours, unlike chemical conditioning of the water, which takes years.
- The treatment is non-invasive as the lead pipes are not removed at any time and there is no need for excavation, unlike that required for pipe replacement. Only a few points of contact and intrusion with the lead pipes are needed for the ALPS technology.
- The cost of the treatment is significantly lower than pipe replacement. The estimated cost is around $10 per meter of treated pipe. This cost is mostly due to labor (the cost of consumables is less than $1), creating opportunities for local plumbers trained to use this technology.
- The electrochemically-generated scales consist of corrosion products typically found in water distribution systems, making them stable over time, unlike other coating technologies, including epoxy resin coatings.