

Scientific Consensus on Pinhole Leaks

[EPA, April 2011: Pinhole Leak Article](#)

"Imagine a tiny, pinhead-sized hole in one of the copper water pipes running through the wall of your home. Water slowly drips, drips, drips. It soaks into the insulation and spreads until your wall becomes a breeding ground for mold and mildew that can not only make you sick, but can also go undetected for months or longer."

"Not all copper plumbing experiences pitting corrosion, but often an entire community can be found where pinhole leak problems are prevalent. Researchers have been investigating what exactly separates such a community from the surrounding areas that are not experiencing similar corrosion problems."

"When there are widespread problems in a community, where many homeowners have a problem, it is likely associated with water chemistry."

[OC Register, August 2012: Water District Sued Over Pipe Leaks](#)

"Marc Edwards is a Virginia Tech civil and environmental engineering professor and a nationally recognized expert on copper corrosion. Part of his work is to study the causes of pipe failures and how to stop them. He said several legal cases are emerging in California and he expects to be retained as an expert.

"We've done probably over a million dollars of research over the last eight years," Edwards said. "We've identified water chemistry, corrosive water, as a key instigator of pinhole leaks. We know that other factors are often involved, including excessive velocity in pipes and poor installation practices, and so each case requires fairly extensive forensic evaluation to try to diagnose the possible cause and cures," he added.

Edwards said the very standards implemented to make drinking water safe might be contributing to pinhole leaks. While disinfectants are needed, too much in some waters might be corrosive. He said research on chloramine has shown it alone doesn't eat holes in pipes, but "it is possible, even likely, that chloramine plus other factors in the water can be highly corrosive."

[OC Register January 2014: Pinhole Leaks Plague South County Homeowners - Lawsuits Are Piling Up Over Tiny Leaks In Copper Pipes That Cause Major Damage.](#)

WHAT RESIDENTS CAN DO: Experts recommend a few tips for homeowners in areas prone to pinhole leaks:

- Discuss pinhole leaks with an inspector before buying a home.
- Review all homeowners insurance policies to ensure pinhole leaks are covered.
- Do regular physical inspections and checks to water pressure to help catch problems early.
- Consider preventative measures, such as a filtration system that removes additives, an epoxy pipelining treatment or total pipe replacement.
- Report any leaks to the local water district for tracking.

Sources: Brandon Taliaferro with A to Z Leak Detection, [Maryland Task Force on Pinhole Leaks in Copper Plumbing](#)

Orange County Plumber Opinion on Pinhole Leaks

[A to Z Leak Detection](#) – Mission Viejo

After fixing 1000s of slab leaks we have found that 99% of the time the water is corroding or eroding away the inside of your pipe. Previously we thought pinhole leaks were caused by bad copper or faulty installation in the last few years our opinion has changed. We have worked on new communities built by different builders using different copper within a couple of miles of each other have over 50% of the homes in their communities have leaks!

[Slab Leak Fix](#) – Orange County

We have found exceptionally high instances of leaks in newer homes in South Orange County including the communities of Laguna Niguel, Mission Viejo, Ladera Ranch, Rancho Santa Margarita and Anaheim Hills.

During our performance of hundreds of leak detection services for slab leaks and pinhole leaks here in Orange County we have seen type K hard and soft copper water lines, correctly installed, develop leaks within 3 years of installation. Two cases in particular come to mind:

- A 3 year old custom home in Shady Canyon, Irvine, had developed 3 active leaks below the slab. The installation of the soft copper type L lines was flawless with both hot and cold lines being fully jacketed with ½" closed cell insulation below grade. The failed lines had no contact with concrete or soil.
- A 6 year old townhouse in Ladera Ranch had developed a pinhole leak in the middle of a 10' section of type L hard copper. This installation was also as close to perfect as could be with all piping isolated and supported on a hanger system with plastic inserts. When the leaking section was removed the internal pitting corrosion could be clearly seen.

Based on our observations of many pipe sections and repairs the pinhole leaks are a result of the water chemistry reacting with the copper and not external forces on the piping. We have observed internal pitting corrosion within most of the leaking lines we have opened for repair. Dr. Marc Edwards* of Virginia Tech has done extensive research into the copper pipe corrosion problem and his studies point to several factors that accelerate the incidence of internal pitting corrosion in our copper piping systems. Two key conditions he isolated are the reduction in NOM (natural organic minerals) as mandated under EPA clean water guidelines and the use of chloramine gas as a disinfectant.

As of this writing no one entity is accepting responsibility for the early demise of our household water systems. The water departments simply state that they are delivering water that meets the EPA guidelines and the Copper Counsel is virtually silent on the issue, they offer a 50 year warranty on copper piping but exclude corrosion. So we are on our own to repair or replace our failing copper pipe water systems.

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