

When there is galvanized pipe as the primary interior plumbing material in a building, probably any Pb contamination of the original layer is gone quickly in the life of the pipe. After that, it's the iron oxyhydroxides reacting to the upstream lead source(s) and the effect of subsequent changes in water chemistry on the surface binding of the lead, and release of iron particles (often with lead on them). So, lead release to a consumer's tap water becomes more of a function of iron corrosion product stability than plumbosolvency, per se. It also would tend to cause lead release to be more characterized as particulate released, as opposed to soluble lead as would be more prevalent with typical Pb(II) hydroxycarbonate, Pb(II) orthophosphate, or PbO₂ mineral scales.

Numerous studies have strongly established that contaminant accumulation takes place in and on drinking water pipe scales throughout the distribution system, as one would expect from simple geochemical principles.

Recent studies in Montreal that have been done by Michele Prevost's group have found basically the same phenomenon as the HDR study in DC, wherein Pb is accumulated in iron coatings from upstream sources.

Cartier, C.; Laroche, L.; Deshommès, E.; Nour, S.; Richard, G.; Edwards, M.; Prevost, M. Investigating dissolved lead at the tap using various sampling protocols, *Jour. AWWA* **2011, 103 (3), 55-67.**

Deshommès, E.; Laroche, L.; Nour, S.; Cartier, C.; Prévost, M. Source and occurrence of particulate lead in tap water, *Water Res.* **2010, 44 (12), 3734-3744.**

The other important thing is that in the Lead and Copper Rule, the two top targeting criteria are sites that have lead service lines, and if they don't, then lead:tin soldered copper during the last 5 years of legal use of the solder. Hence, there is really no routine check on the interior plumbing composition of the houses if they are chosen and sampled based on whether or not they have lead service lines. If a water system or their consultant is curious, they may take on additional study, as the HDR study represents. But it is not readily-available information.

So, given a 1st liter sample is taken, which is usually only representing water in 6+ hours of contact with interior plumbing (not the service line), there's no simple way to tell if that lead came from "seeded" lead accumulated in galvanized pipe, versus soluble lead picked up during the original flow through the service line (before stagnation). Given widespread use of galvanized pipe going back into the mid-20th century, particularly in the Midwest (but not only there), one might anticipate that there are a lot of cases of lead accumulated on galvanized pipe scales out there, which will persist until that stock of old pipe is replaced because it is too tuberculated to use, causes red water on standing, or leaks.

Submitted by:

Michael R. Schock