

Case Study – Lead Solder

A northern towns Environmental Health team were called in after residents of a newly built luxury apartment block thought that some of their illnesses could have been related to a number of plumbing issues they had been experiencing, some of which included discoloured water and sediment. Results from the local authority's samples indicated high lead levels (cold water <math><0.4-310 \text{ ugPb/l}</math>; hot water 0.69-8300 ugPb/l) among other issues.

These were shared with the local water company whose investigation revealed no associated problems with the incoming supply but confirmed the local authority's suspicion after recording a maximum result of 902 ugPb/l.

In such a new development there was no reason to suspect lead would have been used within the plumbing system, so the company's regulations team were sent to check out the 34 apartments.

The inspections revealed drinking water was being distributed from a ground floor storage cistern to each apartment via a central large bore copper pipe system that used a solder free crimped jointing system. With each apartment's plumbing system made up of plastic pipes, it was difficult to see where any lead could leach from. The source was eventually tracked down to a small section of pipework, with only 5-6 soldered joints, at the point of entry into a utility room in each apartment. The solder on these joints had the same dull grey appearance as those seen on the central heating system.

A 'Lead Check Swab' test kit was used to confirm the inspector's suspicions after it turned pink.

Improvement Notices were subsequently issued to the service agents paying the water bill who promptly challenged the developer to carry out all remedial actions. Due to the number of other contractors involved in the development identifying who carried out the work proved impossible for the water company which has delayed remediation works. Samples of the pipe work were removed by the installer for analysis which proved lead solder was used. Further delays occurred after the intervention of the Resident's Association following boiler breakdowns after some remedial works were carried out. Only 11 apartments have so far been completed because of this, but all soldered joints are being replaced with mechanical joints.

This case study highlights how having a close working relationship between the local authority and its Environmental Health team enabled the water company to act quickly to identify the source of the problem and get remedial action underway. It also shows despite the prohibition of lead for more than 25 years its use has not been eradicated. This case in point clearly demonstrates it only takes relatively few joints to be made with lead solder to cause such a high lead failure. This will be an even greater issue with the future reduction in lead parameter values to 10ug/l in 2013.



Positive lead tests



22mm pipe with lead solder and 15mm pipe with lead free solder



Pipework feeding the apartments installed correctly