

From: [Sygo, Jim \(DEQ\)](#)
 To: [Shekter, Smith, Liane \(DEQ\)](#); [Busch, Stephen \(DEQ\)](#); [Prysbey, Mike \(DEQ\)](#)
 Cc: [Shaler, Karen \(DEQ\)](#); [Krisztian, George \(DEQ\)](#)
 Subject: Fwd: One further comment
 Date: Saturday, October 24, 2015 3:00:58 PM

Please review and let's discuss next week.

Sent from my iPhone

Begin forwarded message:

From: "Kaplan, Robert" <kaplan.robert@epa.gov>
Date: October 24, 2015 at 8:58:12 AM EDT
To: Jim Sygo <SygoJ@michigan.gov>
Subject: One further comment

Jim, I'm sorry that we have a straggler. This morning I received one last comment. I ordinarily would say "too late" but this comment reflects deep knowledge of the Flint system (esp. the residence at issue). Pls let me know if there are any issues. Again, sorry for the late and unconsolidated comment.

Bob

1) Has anyone evaluated where the water quality parameter monitoring is being conducted by Flint? If not, we might want to do that to make sure that the sites selected are representative of the water quality throughout the city. My concern is that the chlorine residual range reported by the City in their October 2015 water quality report is given as 0.2 – 4.0 (<https://www.cityofflint.com/public-works/utilitieswater/water-treatment-plant/>). However, we know that in at least one area of the city, even after flushing the tap for 8 hours, there was no detectable chlorine residual. Repeated tests over 18 days (last one was September 3) show the same. These measurements were done after the replacement of the old service line, so the chlorine is not getting to this area (<http://flintwaterstudy.org/information-for-flint-residents/chlorine-monitoring-in-flint-resident-ms-leeanne-walters-home/>)

2) The recommendations in the final report on the sampling we did in Flint are linked to the corrosion control treatment. The lead concentrations in the scale/sediment are orders of magnitude higher than what we typically see in drinking water samples, so I think from a risk perspective, we need to better understand the composition and stability of the scales within the pipes to assess the stability of the scales and inform the treatment. Although the release of scale/sediment is not unique to Flint, the dislodging of scale/sediment would pose the greatest risk to residents by far. Our final report will be posted in the near future so should we include the assessment sampling in our comments on corrosion control (see below)?

Recommendations

As indicated by the results from the Walters' home and previous EPA work, the presence of lead pipes over many years has likely resulted in the accumulation of lead in the scales within non-lead pipes downstream of the lead pipe and physical disturbances to the leaded or non-leaded portions of the service lines have the potential to release large amounts of scale and sediment that could pose an immediate and acute health hazard to the residents. Consequently, even with corrosion control treatment in place in the future, physical disturbances will be capable of dislodging the high lead-bearing scale and sediment from non-lead pipes as well as lead pipes, as was the case in the earlier EPA study.

Obtaining information on the lead reservoirs in the scales within the lead and non-leaded portions of intact service lines is essential for determining the potential risk to residents from lead-bearing scale released as lead lines are replaced as well as the risk that may remain following removal of the lead lines, where the non-leaded portions of service lines are left in place.

As the Walters' service line was very long compared to the length of most typical service lines, it is important to assess the potential risk posed by the scale reservoirs in more typical lengths of service lines by extracting both the leaded and non-leaded portions of service lines which have not been physically disturbed. The service lines chosen for extraction and analysis should be representative of the materials commonly used downstream of the lead pipe (e.g., galvanized iron, copper, plastic). Extraction/handling procedures should be developed by EPA to ensure that damage to the scales from the excavation, extraction and delivery of the service line segments is minimized. Sequential sampling should also be conducted on a representative group of homes with common plumbing materials (e.g., galvanized iron, copper, plastic) to determine the extent to which the lead from the service line has seeded the interior plumbing in homes.

It is also critically important to develop and incorporate ongoing training and public education on the potential for high lead release from the scales as a result of any future physical disturbances to service lines and mitigative actions that residents can take to lower their exposure risk. The training and educational material should be assessed for clarity, meaningfulness, and accessibility by a group of residents and health experts to ensure the effectiveness of the communications.

At a minimum, immediate training and public education on the potential risks posed by physical disturbances to service lines should be developed by communications experts and provided to residents, community groups, elected officials, health departments, pediatricians and gynecologists, water and non-water utilities (gas, electric, cable, etc.), plumbing organizations and contractors. Residents should be notified of scheduled work by water and non-water utilities and informed of the potential risk of increased lead levels due to these disturbances.