Summary of Campus Drinking Water Outlet Testing-2016

University of Michigan

Ann Arbor Campus

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Environment, Health & Safety

Introduction

This water sampling project was initiated at the University of Michigan's Ann Arbor campus by the UM Department of Environment, Health & Safety (EHS) to assess the potential for lead, copper and iron contamination in the drinking water serving all campus and Health System buildings.

There are no federal laws, at this time, requiring testing of drinking water at colleges or universities. Although, in light of the recent water crisis in Flint, the University administration felt it was prudent to assess the drinking water quality of the work and living environments for faculty, staff, students and visitors. No water testing guidance is available for occupational settings; therefore the existing guidance for residential properties was applied during this project. Please see the University of Michigan-Ann Arbor Campus "Lead and Copper Water Sampling Plan" for additional details on sampling strategy.

Background

Municipal drinking water is provided to the University of Michigan's Ann Arbor campus by the City of Ann Arbor's Water Treatment Plant. The water provided to the campus meets the state and federal Safe Drinking Water Act (SDWA) standards for potential contaminants as it leaves the treatment plant, including lead and copper, according to the Annual Water Quality Report issued by the City of Ann Arbor.

Historically, lead may be present in various parts of the plumbing system such as lead solder, brass fixtures and lead pipes. Due to the potential for increasing lead concentrations in drinking water, the best location to sample for lead is at the point of use.

The EPA has established an Action Level (AL) for lead at 15 parts per billion (ppb), and a maximum contaminant level (MCL) of 1,300 ppb for copper. All facilities sampled under the *Lead and Copper Rule* protocol followed these levels and facilities that exceeded the AL or MCL were further assessed for remediation actions.

For this project iron was also assessed as it is a common water quality complaint from the campus community, especially following water main repairs, hydrant flushing and construction projects. Iron is not considered to be a health hazard, but may cause cosmetic or aesthetic effects (taste, color and odor) in drinking water.

Sampling

EHS provided sample planning and oversight of field sampling activities conducted by environmental consultants. RTI Laboratories Inc., a certified water testing laboratory, analyzed the samples for lead, copper and iron.

Water samples were collected in nearly 350 Ann Arbor campus buildings from over 850 drinking water outlets (DWO's) following a modified statistical system of selecting sample points in each building. Each DWO was sampled for lead, copper and iron levels. Testing showed elevated levels of lead or copper in only 37 DWO's in 24 buildings. This is approximately 4% of the DWO's tested. After identification of elevated lead or copper levels in specific DWO's, the DWO was taken out of service. Follow up testing was then conducted to isolate the source. In nearly all cases, the cause of elevated levels of lead or copper at a specific DWO was due to low or no use. Causes of low or no use include: 1) location (isolated DWO's or low building population density), 2) perception (old or dirty DWO's) or 3) availability of filtered/bottled water dispensers.

Remediation Strategies

A number of remediation strategies were employed to mitigate elevated lead or copper levels found in isolated DWO's. Three very low use DWO's were simply removed and not replaced as allowed by building code or through code exemptions. Filters were installed at nine DWO's. Specifically, filters were installed where DWO's were very costly to replace, difficult to match architecturally or where a section of building plumbing was causing the elevated copper or lead levels.

Sixteen DWO's were removed and replaced. In spaces where high water use was documented, the DWO was replaced with a refill station and management was encouraged to remove bottled water from the area. In areas where refill stations were not indicated, like replacement of DWO's was conducted with modern lead free fixtures.

Follow up sampling often indicated that flushing DWO's at specific intervals prevented elevated lead or copper levels from accumulating in the water. Flushing is performed by facilities maintenance or custodial services. Preventative maintenance flushing was the remediation measure for eight DWOs.

The following facilities have had drinking water fixtures removed, replaced or are in the process of replacing them.

Building	Number of Fixtures	Notes
Fleming	2	
Hutchins Hall	5	
SAB	1	
MSRB III	1	
UH South #2	1	

Building	Number of Fixtures	Notes
UH South #3	2	Also removing valves upstream as they may be a source of lead
MMPL	1	Removed, not replaced
UMTRI	1	Removed, not replaced
Boyer	1	
Briarwood 9	1	
Towsley CC	2	Lead at 5.0 ppb or above, not 15 ppb - child care center
Livonia HCC	1	Removed from service. Replaced with bottled water

Reporting of Results

Water sampling results are available to the campus community on the EHS website. The "Campus Drinking Water Quality" link on the EHS webpage provides details about the project and a link to an interactive map. The interactive map allows the user to select a specific building and view the sampling results for that building