To: Lytle, Darren[Lytle.Darren@epa.gov]; Wright, Michael[Wright.Michael@epa.gov]
Cc: Poy, Thomas[poy.thomas@epa.gov]; Harris, Kimberly[harris.kimberly@epa.gov]; Deltoral, Miguel[deltoral.miguel@epa.gov]
From: Crooks, Jennifer
Sent: Tue 4/14/2015 5:54:32 PM
Subject: RE: Call with EPA-Cincinnati, Office of Research and Development

Hi, Darren. I think you mean that you will contact people you know in the Michigan Department of Community Health, since they are working with Genessee County Health Dept on the epidemiological study? Yes, by all means, provide as much assistance to them as you can! We just briefed our Regional Administrator, Susan Hedman, on the Flint drinking water issues, since she will be headed to Flint on Friday to discuss Brownfields (but of course, the drinking water will be a top discussion item). Susan Hedman asked us to relay her tremendous gratitude to both you and Mike Wright, for providing the State your assistance in dealing with the various issues that have come up regarding the Flint drinking water. She was very interested in your participation on the Flint Advisory Committee, Mike.

Thank you again for your interest and assistance to the City, the State, and to us in Region 5 in working with Flint.

Jennifer

Jennifer Kurtz Crooks

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312.582.5853 (fax)

From: Lytle, Darren
Sent: Tuesday, April 14, 2015 6:40 AM
To: Crooks, Jennifer; Wright, Michael
Cc: Poy, Thomas; Harris, Kimberly; Deltoral, Miguel
Subject: RE: Call with EPA-Cincinnati, Office of Research and Development

Jennifer,

Thanks for that update. I am very curious about the Legionella cases. I searched on-line for cases. Since Legionellosis is a reportable illness, it is tracked and reported by each county in the State. I looked at last year's cases and this year to date. An increase in cases was not obvious to me but I do not necessarily understand the reporting system and 46 cases does seem high. If the CHD is correct and they have numbers to support that, it is extremely important. I have questions about the main break theory. To me a much more reasonable link could be the sediment throughout the DS (or biofilm release because of DS WQ change) . For example, we have been finding high numbers of *Legionella* in storage tank sediment. I am tempted to make some calls (to MDEQ) particularly as the investigation is ongoing to offer support and our experiences. What do you think? We have helped them over the years and have a good relationship with them.

Thanks,

Darren

Darren A. Lytle, Ph.D., P.E.

Branch Chief (Acting)

U.S. Environmental Protection Agency

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email: lytle.darren@epa.gov

From: Crooks, Jennifer
Sent: Monday, April 13, 2015 5:22 PM
To: Lytle, Darren; Wright, Michael
Cc: Poy, Thomas; Harris, Kimberly; Deltoral, Miguel
Subject: RE: Call with EPA-Cincinnati, Office of Research and Development

Hi, Darren and Mike. Darren, you emailed me last week to find out the status of what's going on with the Legionella issue; and Mike--you, Tom Poy and I discussed an issue with the Genessee County Health Dept and the City of Flint regarding the Legionella. I apologize for not getting back to you both last week; it took me awhile to track down the MDEQ Drinking Water Director, and then discuss with Tom Poy.

Last week, I talked with Liane Shekter Smith, the Chief of the Office of Drinking Water and Municipal Assistance (Director of Michigan's drinking water program), at the Michigan Department of Environmental Quality (MDEQ). I raised the issue you noted, Mike, of the City's not cooperating with Genessee County Health Department (CHD) regarding response to the CHD's FOIA request.

Liane said she, the CHD and the Michigan Department of Community Health (MDCH) met Tuesday last week to discuss the status of the CHD's FOIA. She said that the first FOIA the CHD sent to the City last month, was so generic that the City told the CHD to refine its request. On April 7, the CHD said they sent the City their second FOIA with more specific requests. MDEQ drinking water offered to assist the City in gathering the data for the CHD's second FOIA, but the MDEQ has not seen a copy of the second FOIA yet.

Liane said that the CHD is convinced that the source of the Legionella is the water main

breaks—they believe there has been an increase in the water main breaks in the Flint distribution system. MDEQ drinking water is very happy to share FOIA information and will help the City gather the information requested. But, keep in mind, that no one tracks water main breaks—Liane said that the City probably has work orders to look through to identify when and where water main breaks occurred.

Normally, the MDCH will only work on a large research project if more than one county is involved, but in this case, MDCH is working with the CHD to do an epidemiological investigation to determine the source of the Legionella, since that must be done first. However, Liane said the CHD has not been very responsive in assisting MDCH in their investigation. There are 46 cases of Legionella being studied, and MDCH hopes to be finished with its epidemiological investigation by the end of April.

END

If you have any questions, please let me know.

Jennifer

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From: Lytle, Darren
Sent: Tuesday, April 07, 2015 5:47 PM
To: Crooks, Jennifer
Cc: Wright, Michael
Subject: Re: Call with EPA-Cincinnati, Office of Research and Development

Jennifer,

Have you heard any more on the possible legionella issue?

Darren

Sent from my iPhone

On Apr 7, 2015, at 5:16 PM, Crooks, Jennifer <crooks.jennifer@epa.gov> wrote:

> Mike—FYI--below are the notes from our call with Darren Lytle last week about legionella. The email is to Mike Prysby, the District Engineer at MDEQ, who works with Flint. These are a couple of items Darren asked for.
>
> Jennifer Crooks
>
> 312.886.0244
>
> **From:** Crooks, Jennifer
> **Sent:** Tuesday, March 31, 2015 2:31 PM
> **To:** Prysby, Mike (DEQ); Busch, Stephen (DEQ)
> **Cc:** Thomas Poy; Bair, Rita; Damato, Nicholas; Murphy, Thomas; Shoven, Heather; Kuefler, Janet; Deltoral, Miguel
> **Subject:** Call with EPA-Cincinnati, Office of Research and Development
>
> Mike (Prysby-MDEQ)—below are the notes from the call we had last week regarding Legionella, as we discussed. You also mentioned that I should remind you to:

1. check with Mike Glasgow at Flint (Water Treatment Plant) to ask about their flushing strategy; what types of flushing they are conducting; and

2. that you will send me the March MOR when you receive it in April (from Flint). (Kris Donaldson from Warren office sent me the March 2014 MOR for Flint w/Detroit water.)

Both of these items above were discussed by Darren Lytle; that these documents will provide him basic data about the Flint water system.

Thank you!

Jennifer Crooks

Michigan Program Manager

Ground Water and Drinking Water Branch

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Summary:

Last Thursday, March 26, we talked with Darren Lytle, Acting Chief of the Treatment Technology Evaluation Branch at EPA-Cincinnati, Office of Research and Development. Also in attendance was Simoni Triantafyllidou, a post-doctoral fellow working with Darren. Tom Poy, Nick Damato, Janet Kuefler, Miguel, and Jennifer were also in attendance.

Tom Poy summarized for Darren and Simoni what has occurred with the Flint drinking water since April 2014 when the change over from Detroit to Flint River water occurred, including the violations Flint has incurred since then. Miguel said that we don't know if Flint has a lead problem at this time. Due to findings by Genessee County Health Dept. that there has been an increase in the incidence of Legionella since April 2014, Genessee CHD has FOIA'd the City of Flint for operational data.

Darren talked about several treatments they have done for Legionella in 2 hospitals. The first treatment used copper/silver ions for disinfection. They did sampling at 10 locations, took water quality parameters and took microbiological samples. But they shut down the treatment due to staining of toilets on the cold water side. They did turn the treatment back on, only on the hot water side. The second treatment is a monochloramine system in the hot water feed, but the secondary effects are nitrification.

Darren said they have been doing studies for Homeland Security, collecting sediments at the bottom of storage tanks. He is finding high concentrations of Legionella in the bottom of the tanks.

Darren said anytime there is a treatment change, issues arise with the drinking water quality. Thus, what does this do to the transport of organisms like Legionella? Does is cause organisms to desorb and go into solution? The changes in water chemistry change these organisms electrostatically, and the biofilms with the distribution system pipes are disrupted and de-stabilize. Thus, different contaminants can be released. So maybe this isn't happening in people's homes; but it is happening in the distribution system pipes.

Darren thought that the incidence of Legionella must be fairly extensive for the CHD to notice and study.

We talked about the pathogen, Legionella. Simoni said that Legionella is everywhere; it is a group of opportunistic pathogens; meaning that it looks for high risk/immunocompromised hosts to infect. It may infect others but not show signs of disease because their immune system is working properly. Simoni was interested in knowing where are these cases of Legionella occurring? The background information/data is important in a study of the incidence of Legionella. Jen said she would gather data from past use of Detroit water (March 2014 monthly operation report-MOR), and recent MORs from use of Flint River water, and TTHM levels since April 2014. Tom Poy said that the Dept of Community Health is communicating with the Genessee CHD regarding their findings on Legionella.

Miguel said that extensive flushing is going on in Flint to address stagnant water that fosters bacti problems and TTHM development. But, stirring up the distribution system lines with flushing is stirring up the sediment in the pipes, and then causes a large chlorine demand, thus decreasing the chlorine residual which could promote the growth of bacteria, such as Legionella. Chlorine residual will come back gradually, though. Jen said she would check

in with the State to find out the details of Flint's flushing program; is it unidirectional for example?

Darren asked, How can we help? He offered to conduct sampling and analyses for Legionella when it is needed. Tom Poy said the State is currently figuring out a communication-with-the-public plan. Mike Wright is the HQ-ORD DDBP expert and he is helping with the TTHM health effects issue. Tom Poy said that we are laying a foundation now with resources for when the State goes public with the issue of Legionella. Darren said that the labs are set-up now ready for Legionella sampling and analyses. Mark Rodgers is the Chief of the Microbial Contamination Branch at EPA-Cincinnati, ORD.

Darren is doing a RARE project in Region 3 on Legionella. EPA could work on the DNA to determine if the Legionella infecting people is from the distribution system. Type 1 Legionella causes disease, but other forms of Legionella do not cause disease. But Darren said, we must identify the source of the Legionella first.

Miguel said that we must look at the overall picture, i.e. is the system causing this increased incidence of Legionella disease? Darren said that first, we must find the source—is Legionella there? If Legionella is present, in the tanks/pipes, then disturbance of changing the water quality and flushing, could cause it to proliferate.

END