

# Health Department

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## OFFICE OF THE HEALTH OFFICER

July 18, 2017

Nick Fish  
Commissioner City of Portland  
1221 SW 4<sup>th</sup> Ave  
Portland, OR 97204

Dear Commissioner Fish,

Multnomah County appreciates the opportunity to provide input to the up-coming Portland City Council decision on a long-term strategy to improve drinking water quality and to enhance the ability of the system to handle future threats that would prevent uninterrupted delivery of safe drinking water.

To conclude that the County strongly favors filtration over ultraviolet treatment to improve the health, safety, and resilience of the water supply, we conducted extensive internal discussions with health and emergency management leadership. These discussions were informed by technical input from Portland Water Bureau (PWB) and the external experts convened by PWB to review the *Cryptosporidium* detection events of early 2017. Under an overarching public health framework of the 'precautionary principle' we also reviewed reportable disease records, PWB water quality data, current and anticipated EPA and OHA regulations, plus known and anticipated environmental threats to the region. We understand that City Council must balance many factors when making decisions about management of the utility bureaus but from the health, safety, and emergency preparedness perspectives, filtration is the best choice.

The City and State of Oregon regulators need to agree on the timing of an upgrade to eliminate the risk of spreading cryptosporidium through the water supply. We believe that the on-going risk of illness remains low and, consequently, the specific timeframe for the upgrade should not be a major factor in the decision. More specifically, we do not anticipate any health benefit from the shorter timeframe for installing ultraviolet versus filtration. During the series of cryptosporidium detections in early 2017, Multnomah County worked extensively with the Portland Water Bureau to understand and communicate the risk to the public and to vulnerable populations. By March 2017 enough time had passed for potential illnesses related to drinking water to have occurred so that we could complete our review of lab confirmed cases of Cryptosporidiosis. Diarrhea caused by *Cryptosporidium species* has been a reportable disease in Oregon for many years so we have a high degree of confidence in the expected seasonal reports of cryptosporidiosis in Multnomah County. In our review of such reported cases for 2017, we observed no change in the expected number of illnesses that began in January,

February and March compared to previous years. It is also worth noting that the average number of *Cryptosporidium* illnesses detected per month during the winter in Multnomah County is low- usually less than 5 cases per month. In 2017, laboratories reported only two cases from January and four each from February and March in Multnomah County residents.

During normal times, both ultraviolet treatment and filtration will be effective in reducing the low risk of cryptosporidium in the Bull Run water supply. Filtration however has advantages whenever the turbidity increases in the reservoirs. Periods of high turbidity are also when the risk of *Cryptosporidium* would be the greatest, yet ultraviolet treatment is less effective in cloudy water. Ironically, if ultraviolet treatment is chosen to protect against *Cryptosporidium*, it might fail when the risk is greatest. There are a number of plausible scenarios in which turbidity increases beyond historical norms including extreme precipitation or normal winter rains following a summer forest fire in the watershed.

In addition to the risk from *Cryptosporidium*, turbidity from Bull Run water has other consequences which can be mitigated by filtration but not by ultraviolet treatment. Our first health concern related to turbidity is the unintended chemical reactions from chlorination of water containing dissolved organic material. These reactions lead to ‘disinfection by-products’ such as trihalomethanes which are a concern because they are related to similar chemicals which promote the development of cancer. As such, disinfection by-products in drinking water are regulated by EPA and while PWB is currently in compliance with these regulations, future standards may be more rigorous. The County supports an infrastructure upgrade to the water system that prevents unnecessary exposure to disinfection by-products.

Control over turbidity through filtration has several other benefits when considering current and future threats. As concerns about climate change continue to be confirmed, more extreme weather including droughts are anticipated. We understand that a greater volume of the existing Bull Run reservoirs could be used during a drought if filtration were in place but this additional capacity would not be available if ultraviolet treatment were installed. An additional concern from the warming climate is that water temperatures in the Bull Run will tend to rise and lead to toxic blooms of algae. Toxic blue-green algae must be removed from drinking water to make it safe and while this can be achieved with filtration, ultraviolet treatment is not effective. High and variable turbidity also burdens certain healthcare facilities with the requirement to install their own filtration systems; those that already have filtration can be burdened with additional maintenance when the turbidity from PWB water increases.

A final but unpredictable threat to the region is a Cascadia subduction zone earthquake and we support the PWB’s comprehensive efforts to mitigate the consequences to the water supply and distribution system. Among the many needs in the days following an earthquake, a safe water supply is one of the most pressing. It is our understanding that a filtration system will provide more resilience in providing safe drinking water than an ultraviolet treatment facility in this scenario.

Multnomah County urges the Portland City Council to consider the many health and resilience benefits of filtration over ultraviolet treatment as it makes decisions about improving water quality while also helping the region respond to the threats of climate change and the risk of a major earthquake. A hybrid timeline-ultraviolet first then filtration in 20+ years- incurs substantial cost but provides no measurable health benefit and delays enhancements to make Portland and Multnomah County more resilient.

Please contact me if I can provide additional information.

Sincerely



Paul Lewis, MD, MPH  
Multnomah County Health Officer

cc:

Chloe Eudaly, Commissioner City of Portland  
Amanda Fritz, Commissioner City of Portland  
Dan Saltzman, Commissioner City of Portland  
Ted Wheeler, Mayor City of Portland  
Joanne Fuller, Director, Multnomah County Health Department