Public Health Goals Report

City of Pomona

June 2019

Background

Provisions of the California Health and Safety Code 116470 (b) specify that water utilities with 10,000 or more service connections are required to prepare a special report by July 1, 2019, if water quality measurements have exceeded any Public Health Goals (PHGs). PHGs are non-enforceable goals established by the California Environmental Protection Agency's (Cal-EPA) Office of Environmental Health Hazard Assessment (OEHHA). The law also requires that where OEHHA has not adopted a PHG for a constituent, water suppliers are to use the Maximum Contaminant Level Goals (MCLGs) adopted by United States Environmental Protection Agency (USEPA). Only constituents which have a California primary drinking water standard, also known as Maximum Contaminant Level (MCL), and for which either a PHG or MCLG has been set are to be addressed.

This report provides information required by law of constituents detected in the City's water supply between 2016 and 2018 at levels exceeding the applicable PHG or MCLG. Included is the numerical public health risk associated with the MCL and the PHG or MCLG, the category or type of risk to health that could be associated with the constituent, the best treatment technology available that could be used to reduce the constituent level, and an estimate of the cost to install that treatment, if it is appropriate and feasible.

What Are PHGs?

PHGs are set by the OEHHA and are based solely on public health risk considerations. None of the practical risk-management factors that are considered by the USEPA or State Water Resources Control Board (SWRCB) Division of Drinking Water (DDW) in setting drinking water standards (MCLs) are considered in setting the PHGs. These factors include analytical detection capability, treatment technology available, benefits and costs. The PHGs are not enforceable and are not required to be met by any public water system. MCLGs are the federal equivalent to PHGs and should not be confused with MCLs which are enforceable.

Water Quality Data Considered

All of the water quality data collected by our water system between 2016 and 2018 for purposes of determining compliance with drinking water standards was considered. This data was summarized in our 2016, 2017, and 2018 Consumer Confidence Reports, which have been made available to our customers, with the most recent one, to be posted on July 1, 2019.

Guidelines Followed

The Association of California Water Agencies (ACWA) formed a workgroup which prepared guidelines for water utilities to use in preparing these required reports and those guidelines were used.

Best Available Technology (BATs) and Cost Estimates:

Both the USEPA and SWRCB DDW adopt what are known as Best Available Technologies, or BATs, which are the best known methods of reducing contaminant levels to below a given MCL. Costs can be estimated for such technologies. However, since many PHGs and all MCLGs are set much lower than the MCLs, it is not always possible, or feasible, to determine what treatment would be needed to further reduce a constituent downward to or near the PHG or MCLG, many of which are set at zero. Estimating the costs to reduce a constituent to zero is difficult, if not impossible because it is not possible to verify by analytical means that the level has been reduced to zero. In some cases, installing treatment to try and further reduce very low levels of a constituent may have adverse effects on other aspects of water quality.

Constituents Detected That Exceed a PHG or a MCLG:

The following is a discussion of constituents that were detected in one or more of our drinking water sources at levels above the PHG, or if no PHG, above the MCLG.

Arsenic:

The PHG for arsenic is 0.004 parts per billion (ppb). The MCL or State drinking water standard is 10 ppb. California's Detection Limit for Purposes of Reporting (DLR) is 2 ppb. Any data below the State's DLR is considered "non-detect" (ND) or (less than the DLR of 2 ppb).

From 2016 through 2018, both Pomona sources and purchased water sources had detections of arsenic above the PHG. The levels of arsenic detected in Pomona sources ranged from ND to 2.2 ppb, and the average was 1.1 ppb. Purchased water from Metropolitan Water District of Southern California (MWD) also had detections of arsenic above the PHG, ranging from ND to 2.4 with the average being 0.184 ppb.

All Samples analyzed indicate Arsenic, was below the MCL.

The numerical health risk is one person in a million at the PHG level and 2.5 persons in a thousand at the MCL level. The category health risk associated with arsenic is an increased risk of cancer. The EPA recommends various treatment methods for the removal of arsenic. The BATs for removing arsenic are adsorption media, ion exchange, coagulation/filtration, and reverse osmosis. It is unknown whether these technologies can reduce arsenic levels to the PHG level, and if so, what the cost may be. Ion Exchange (IX) would likely be the method utilized to treat for arsenic. The estimated cost to install and operate such a treatment system would be approximately $37.44 million per year, or an increased cost of $251.17 per person. This does not include costs of energy, operation and maintenance of wells, boosters, and related pumping equipment.

1,2-Dibromo-3-chloropropane (DBCP):

1,2-Dibromo-3-chloropropane (DBCP) is also known as dibromochloropropane and has a PHG of 1.7 parts per trillion (ppt). The MCL and State drinking water standard is 200 ppt. California's Detection Limit for Purposes of Reporting (DLR) is 10 ppt. Any data below the State's DLR is considered "non-detect" (ND) or (less than the DLR of 10 ppt).

From 2016 through 2018, Pomona sources had detections of DBCP above the PHG. The levels of DBCP detected in Pomona sources ranged from ND to 110 ppt, and the average was 5 ppt. Purchased water from Metropolitan Water District of Southern California (MWD) had no detections of DBCP.

All samples analyzed indicate the level of DBCP was below the MCL.

The numerical health risk is one case in a million at the PHG level and one case in ten-thousand at the MCL level. The category health risk associated with DBCP is an increased risk of cancer. The BATs to treat for DBCP are GAC or packed tower aeration. GAC would likely be the treatment option required to lower the DBCP levels. The estimated cost to install and operate GAC is $3.35 million per year or an increased cost of $22.47 per person. This does not include costs of energy, operation and maintenance of wells, boosters, and related pumping equipment.

Radionuclides:

There are three radioactive contaminants that were detected above the PHG/MCLG level. The three contaminants are gross alpha, gross beta, and uranium and each have a MCLG of zero. Uranium has a PHG set at 0.43 picocuries per Liter (pCi/L). Samples collected from Pomona sources between 2016 and 2018 detected gross alpha, gross beta, and uranium levels above the PHG/MCLG. All three radionuclide contaminants were detected above the PHG/MCLG in water purchased from MWD. All radionuclide detections from Pomona sources as well as MWD were below their applicable MCL. Please note that not all sources in Pomona and MWD were due for sampling radionuclides in 2016 through 2018. The data reported is not representative of weighted average data for the system.

- Gross alpha radioactivity is a measurement of all alpha activity emitted from radioactive elements that are naturally present. Gross alpha has an MCL of 15 pCi/L. Levels of gross alpha from Pomona sources range from non-detect (less than 3.0 pCi/L) to 5.5 pCi/L, and the average was 0.205 pCi/L. Gross alpha radioactivity from MWD range from non-detect to 4 pCi/L with an average being non-detect.

- Gross beta measures radioisotopes that emit beta and photon particles. The MCL for gross beta is 50 pCi/L. Levels of gross beta from Pomona sources were not due during this period. Imported water from MWD detected levels ranging from 4 pCi/L to 6 pCi/L with an average of 0.72 pCi/L

- The MCL or State drinking water standard for uranium is 20 pCi/L. Uranium was detected in Pomona sources at levels ranging from non-detect (less than 1.0 pCi/L) to 4.7 pCi/L with an average of 1.9 pCi/L. Purchased water had detections ranging from non-detect to 3 pCi/L with an average of 1.46 pCi/L.

People who drink water containing radionuclides in excess of their MCL over many years may have an increased risk of cancer. In addition, exposure to uranium in drinking water may cause toxic effects to the kidney. The numerical health risk for gross alpha at the MCLG level is zero and the risk associated with the MCL is one excess case of cancer in one thousand people over a long period of time for the most potent alpha emitter. For gross beta, the health risk associated with the MCLG is 0 and the risk associated with the MCL is two additional cases of cancer in one thousand people over a long period of time for the most potent beta emitter. The numerical health risk for uranium at the PHG level is one person in a million and at the MCL is 5 persons per hundred thousand.

Radionuclides are removed by the same treatment technology. Treatment to remove Gross alpha, will also remove gross beta and uranium. The BATs for the removal of radionuclides are ion exchange, manganese greensand filters, and reverse osmosis. The recommended treatment option to reduce radionuclides would be to combine both ion exchange and reverse osmosis. This is done to reduce loading from contaminants and ensure residual management. The use of ion exchange does involve additional costs for the treatment and disposal of the used resin. The estimated cost to install and operate such a treatment system would be $31.17 million per year, or an increased cost of $209.18 per person. This does not include costs of energy, operation and maintenance of wells, boosters, and related pumping equipment.

Tetrachloroethylene (PCE):

The PHG for tetrachloroethylene (PCE) is 0.06 parts per billion (ppb). The MCL or State drinking water standard for PCE is 5 ppb. From 2016 through 2018, the level of PCE detected in Pomona sources ranged from non-detect (below 0.5 ppb) to 4.6 ppb, and the average was 0.6 ppb. Purchased water from MWD had no detections of PCE.

Because the City currently treats to remove PCE in water delivered to city customers, there was no exceedance of the MCL.

The category of health risk associated with PCE, and the reason that a drinking water standard was adopted for it, is that people who drink water containing PCE in excess of the MCL over many years may have an increased risk of cancer. SWRCB DDW states that "drinking water that meets this standard (the MCL) is associated with little to none of this risk and should be considered safe with respect to PCE." The numerical health risk for PCE at the PHG is one person in one million. The numerical health risk at the MCL is eight persons in a hundred thousand.

The BATs to lower levels of PCE is either GAC or packed tower aeration (PTA). GAC with long empty bed contact time would likely be required to attempt to lower the PCE level below 0.06 ppb. The estimated cost to install and operate such a treatment system that would reliably reduce the PCE

level to zero would be estimated at approximately $6.37 million per year, or an increased cost of $42.43 for each person per year. This includes annualized capital, operating and maintenance costs for treatment alone. This does not include costs of energy, operation and maintenance of wells, boosters, and related pumping equipment.

Trichloroethylene (TCE):

The PHG for trichloroethylene (TCE) is 1.7 ppb. The MCL or State drinking water standard for TCE is 5 ppb. From 2016 through 2018, the levels of TCE detected in Pomona sources ranged from non-detect to 5.7 ppb, and the average was 1.1 ppb. Although the range of TCE was above 5.0 on a single sample, the average for the month(s) compliance sampling was under 5ppb. Purchased water from MWD had no detections of TCE.

Because the City currently treats to remove PCE in water delivered to city customers, there was no exceedance of the MCL.

The numerical health risk for TCE at the PHG of 1.7 ppb is one person in a million. The numerical health risk at the MCL is three persons in a million. The category of health risk associated with PCE, and the reason that a drinking water standard was adopted for it, is that TCE is carcinogenic. People who drink water containing TCE in excess of the MCL over many years may have an increased risk of cancer. SWRCB DDW states that "drinking water which meets this standard (the MCL) is associated with little to none of this risk and should be considered safe with respect to TCE." The BATs for TCE are the same as for PCE. GAC treatment to reduce PCE will also reduce TCE so both contaminants share the same cost estimate.

Coliform Bacteria:

During 2016, 2017, and 2018, the City collected between 140 and 189 samples each month for coliform analysis. Occasionally, a sample was found to be positive for coliform bacteria but repeat samples were negative and follow up actions were taken. A maximum of 4.3% of these samples were positive in any month.

The MCL for coliform is 5% positive samples of all samples per month and the MCLG is zero. The reason for the coliform drinking water standard is to minimize the possibility of the water containing pathogens which are organisms that cause waterborne disease. Because coliform is only a surrogate indicator of potential presence of pathogens, it is not possible to state a specific numerical health risk. While USEPA normally sets MCLGs "at a level where no known or anticipated adverse effects on persons would occur", they indicate that they cannot do so for coliforms.

Coliform bacteria are "indicator organisms" that are ubiquitous in nature and are not generally considered harmful. They are used because of the ease in monitoring and analysis. If a positive sample is found, it indicates a potential problem that needs to be investigated and follow up sampling must be completed. It is not unusual for a system to have an occasional positive sample. It is

difficult if not impossible to ensure a system will never get a positive sample; therefore, no estimate of cost has been included.

Chlorine is added at sources to ensure water served is microbiologically safe. Chlorine residual levels are carefully controlled to provide the best health protection without causing the water to have undesirable taste and odor or increasing the disinfection byproduct level. This careful balance of the treatment process is essential to continue supplying our customers with safe drinking water.

Hexavalent Chromium

The PHG for Hexavalent Chromium (Cr6) is .02 ppb. The MCL or State drinking water standard for Cr 6 was repealed September 2017; therefore, currently there is no MCL. Prior to September 2017, the MCL or State drinking water standard for Cr 6 was 10 ppb. The typical sources of Cr 6 are discharges from industrial waste facilities and erosion of natural deposits. From 2016 through 2018, the levels of Cr 6 detected ranged from non-detect (<1.0 ppb) to 20 ppb, and the average was 1.79 ppb. Although there were detections exceeding the PHG, there was no exceedance of the MCL prior to the repeal.

The numerical health risk for Cr 6 at the PHG of .02 ppb is one person in a million. The numerical health risk at the MCL of 10 ppb is five persons in ten thousand. The category of health risk associated with Cr 6, and the reason that a drinking water standard was adopted for it, is that Cr 6 is carcinogenic. People who drink water containing Cr 6 in excess of the MCL over many years may have an increased risk of cancer. SWRCB DDW states that "drinking water which meets this standard (the MCL) is associated with little to none of this risk and should be considered safe with respect to Cr 6." The BAT for Cr 6 treatment / removal is still being researched and until further examination it is not possible to quantify at this time.

Recommendations for Further Action

The City of Pomona's drinking water quality meets all SWRCB DDW and USEPA drinking water standards set to protect public health. To further reduce levels of the constituents identified in this report that are already below the health-based Maximum Contaminant Levels established to provide safe drinking water, additional costly treatment processes would be required. The effectiveness of the treatment processes to provide any significant reductions in constituent levels at these already low values is uncertain. The health protection benefits of these further hypothetical reductions are also not at all clear and may not be quantifiable. Therefore, no action is proposed.

Attachments:

Attachment 1 – California Health and Safety Code: Section 116470 & 116475

Attachment 2 – Table of Regulated Chemicals with MCLs, PHGs or MCLGs

Attachment 3 – Public Health Goal Exceedance Report