

Triennial Report on Water Quality Relative to Public Health Goals

May 2019

Prepared in Accordance with:
California Health and Safety Code, Section 116470(b)



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Background

The California Health and Safety Code Section 116470(b) specifies that water utilities serving more than 10,000 connections prepare a brief written report every three years that documents detections of any constituents that exceed a Public Health Goal (PHG) in the preceding three years. PHGs are non-enforceable goals established by the California Environmental Protection Agency's Office of Environmental Health Hazard Assessment (OEHHA). The law also requires that where OEHHA has not adopted a PHG for a constituent, the water suppliers are to use the Maximum Contaminant Level Goal (MCLG) adopted by the United States Environmental Protection Agency (USEPA). Only constituents that have both a California primary drinking water standard and a PHG or MCLG as of December 31, 2018 are to be addressed in the report.

There are a few constituents that are routinely detected in water systems at levels well below drinking water standards for which no PHG nor MCLG has been adopted by OEHHA or USEPA including Total Trihalomethanes. These will be addressed in future reports following the adoption of PHGs or MCLGs.

CCWD prepared the last Triennial PHG Report in 2016. The 2019 Triennial PHG Report, due July 1, 2019, covers constituents detected in Contra Costa Water District's (CCWD) water supply during calendar years 2016 through 2018 at a level exceeding an applicable PHG or MCLG and provides the required information for each constituent. Included is the numerical public health risk associated with the Maximum Contaminant Level (MCL) and the PHG or MCLG, the category or type of risk to health that could be associated with each constituent, the best 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 Public Health Goals?

Public Health Goals (PHGs) are set by OEHHA and are based solely on public health risk considerations. None of the practical risk-management factors that are considered by the USEPA or the State Water Resources Control Board, 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, benefit 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.

Water Quality Data Considered

All of the water quality data that was collected from CCWD's water system during calendar years 2016, 2017 and 2018 for purposes of determining compliance with drinking water standards was reviewed. The data was summarized in the 2016, 2017, and 2018 Annual Water Quality Reports (AWQRs) that were made available on CCWD's website. Post cards were mailed to all customers with a link to the CCWD website and information on how to request a hard copy of the AWQR, if preferred.

Guidelines Followed

The Association of California Water Agencies (ACWA) formed a workgroup which prepared guidelines for water utilities to use in preparing these reports. The ACWA guidelines were updated in 2019 and were utilized in the preparation of this report. No formal guidance was available from state regulatory agencies.

Best Available Treatment Technology and Cost Estimates

Both the USEPA and DDW adopt what are known as Best Available Technologies (BATs) that are the best-known methods of reducing contaminant levels to the MCL. Costs can be estimated for such technologies. However, since many PHGs and all MCLGs are set much lower than the MCL, it is not always possible or feasible to determine what treatment is 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, because it is not possible to verify by analytical means that the level has been lowered to zero. In some cases, installing treatment to further reduce very low levels of one constituent may have adverse effects on other aspects of water quality.

Constituents Detected that Exceed a PHG or MCLG

The following is a discussion of constituents have an MCL and that were detected in CCWD’s drinking water at levels above the PHG, or if no PHG, above the MCLG.

Total Coliform Bacteria

During calendar years 2016 through 2018, CCWD was required to collect a minimum of 120 samples per month to meet the monitoring requirements of the Total Coliform Rule. On average, CCWD collected approximately 180 samples per month, but the actual number varied from month to month. Occasionally, a sample was found to be positive for coliform bacteria but secondary samples were negative and follow-up actions were taken. A summary of coliform positives is indicated in Table 1.

Table 1: Summary of Total Coliform Results

Month	Number of Samples	Number of Samples Coliform Positive	Percent Positive	Number of Follow-Up Samples Coliform Positive
May 2016	190	1	0.5%	0
October 2016	190	2	1.1%	0
November 2016	201	1	0.5%	0
December 2016	174	1	0.6%	0
April 2017	167	1	0.6%	0
May 2017	193	1	0.5%	0
October 2017	199	2	1.0%	0
June 2018	184	4	2.2%	0
July 2018	210	3	1.5%	0
August 2018	192	1	0.5%	0
November 2018	175	1	0.6%	0

The MCL for total coliform is 5% positive samples of all samples per month and the MCLG is zero percent. The reason for the total coliform drinking water standard is to minimize the possibility of the water containing pathogens, which are organisms that cause waterborne disease. Because total coliform bacteria are only a surrogate indicator of the 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 with total coliform bacteria.

Coliform bacteria are an indicator organism 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 done. It is not at all unusual for a system to have an occasional positive sample. It is difficult, if not impossible; to assure that a system will never get a positive sample. In all cases of detection in CCWD treated water, follow-up samples were negative for total coliform indicating good water quality and no system contamination.

CCWD utilizes ozone as a primary disinfectant in the treatment process to achieve the requisite microbial inactivation outlined in the Surface Water Treatment Rule to assure that the water served is microbiologically safe. Before delivery to the distribution system, chloramines are added at a carefully controlled residual level to provide the best health protection without causing the water to have undesirable taste and odor or increasing the disinfection byproduct formation potential. This careful balance of treatment processes is essential to continue supplying our customers with safe drinking water.

Other equally important measures that CCWD has implemented include: an effective cross-connection control program, maintenance of a disinfectant residual throughout our system, episodic and unidirectional flushing, an effective monitoring and surveillance program, and maintaining positive pressures in the distribution system. CCWD’s system has already taken all of the steps identified by DDW as best available technology for coliform bacteria in Section 64447, Title 22, of the California Code of Regulations.

Radionuclides

During calendar years 2016 through 2018, CCWD was required to collect samples and test for radionuclides from source water locations at least once during the three-year period. This sampling was performed in 2016. In 2003, OEHHA concluded that PHGs for Gross Alpha and Gross Beta were not practical. The MCLG set by USEPA for radiological samples is zero. Two radionuclides were above the MCLG: gross alpha particle activity (gross alpha) and gross beta particle activity (gross beta). A summary of these results are shown in Table 2.

Table 2: Summary of Radiological Constituents Detected

Constituent	PHG (pCi/L)	MCL (pCi/L)	MCLG (pCi/L)	DLR (pCi/L)	Range	Average
Gross Alpha	None	15	0	3	ND - 7.5	Non-Detect
Gross Beta	None	50	0	4	ND - 5.2	Non-Detect

ND – Non-Detect

The detected results during this time frame were just over the detection limit for reporting (DLR) and were lower than the respective MCLs.

A description of the public health risks, categories of health risks and best available treatment technology for each of the detected constituents follows.

Gross Alpha

DDW has set the drinking water standard for gross alpha at 15 picoCuries per liter (pCi/L). California OEHHA has determined that it would not be practical to develop a PHG for the category of alpha emitters. However, the MCLG set by the USEPA is zero. The numerical health risk for a MCLG of zero is zero.

Gross alpha was found at four out of nine CCWD source water locations tested in 2016 and one location in 2017. The range of results was from non-detect to 7.5 pCi/L with an average below the detectable level of 3 pCi/L

The major source of gross alpha particles in drinking water is from the erosion of natural deposits. Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing gross alpha in excess of the MCL over many years may have an increased risk of getting cancer. The BAT for removal of gross alpha has been identified as ion reverse osmosis.

Gross Beta

DDW has set the drinking water standard for gross beta at 50 pCi/L. California OEHHA has determined that it would not be practical to develop a PHG for the category of beta emitters. However, the MCLG set by the USEPA is zero. The numerical health risk for a MCLG of zero is zero.

Gross beta was detected at six out of nine source water locations in 2016 and one location in 2017. The range of results was from non-detect to 5.2 pCi/L with an average below the detectable level of 4 pCi/L.

Gross beta in drinking water can occur from natural sources. Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. There are also a number of anthropogenic (man-made) sources such as radioactive materials used in the medical industry. Some people who drink water containing gross beta in excess of the MCL over many years may have an increased risk of getting cancer. The BAT for removal of gross beta has been identified as ion exchange and reverse osmosis.

Recommendations for Further Action

CCWD's drinking water quality meets all DDW and USEPA drinking water standards set to protect public health. The levels of constituents identified in this report are already significantly below the health-based MCLs established to provide safe drinking water. Further reductions in these levels would require additional costly treatment processes and the ability of these processes to provide significant additional reductions in constituent levels is uncertain. In addition, the health protection benefits of these possible reductions are not at all clear and may not be quantifiable. Therefore, no action is proposed at this time.