

CITY OF MANHATTAN BEACH

2022 TRIENNIAL PUBLIC HEALTH GOAL REPORT

Background

Provisions of the California Health and Safety Code (HSC §116470(b)) specify that water utilities with greater than 10,000 service connections prepare a special Public Health Goal Report (Report) every three years if water quality measurements have exceeded any Public Health Goal (PHG); the latest Report is due by July 1, 2022. PHGs are non-enforceable goals established by the California Environmental Protection Agency (Cal-EPA) and the Office of Environmental Health Hazard Assessment (OEHHA). The regulation 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 having a California primary drinking water standard, also known as a Maximum Contaminant Level (MCL), and either a PHG or MCLG are required to be addressed in the Report. The attached table contains a list of all relevant current PHGs, MCLGs, MCLs, and Detection Limits for purposes of Reporting (DLRs).

A few constituents are routinely detected in water systems at levels usually well below the drinking water standards for which OEHHA or USEPA has not yet adopted a PHG or MCLG. As PHGs and MCLGs are updated, the City will include them in its evaluation in future Reports as applicable.

The Report addresses any constituent detected in the City's water supply between 2019 and 2021 at a level exceeding any applicable PHG or MCLG, as required by the regulation. The Report includes the numerical public health risk associated with the MCL and the PHG or MCLG, the type of risk to health that could be associated with each 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 Public Health Goals (PHGs)?

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 State Water Resources Control Board (SWRCB) Division of Drinking Water (DDW) in setting MCL drinking water standards 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 likewise are non-enforceable.

What Water Quality Data are Considered?

All of the water quality data collected in the City's water system between 2019 and 2021 for purposes of determining compliance with drinking water standards was considered. This data was all summarized in the City's 2019, 2020, and 2021 Consumer Confidence Reports which were posted on the City's website at <https://www.manhattanbeach.gov/departments/public-works/utilities-division/water-systems/treatment/annual-water-quality-report>.

What Guidelines are Followed for this Report?

The Association of California Water Agencies (ACWA) formed a workgroup that prepared guidelines for water utilities to use in preparing these newly required reports. The ACWA guidelines were used in the preparation of the City's report. No guidance was available from state regulatory agencies.

Best Available Treatment Technology and Cost Estimates:

Both the USEPA and DDW adopt what are known as BATs or Best Available Technologies, which 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, nor 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 try and further reduce very low levels of one constituent may adversely affect other aspects of water quality.

What Constituents were Detected that Exceed a PHG or MCLG?

The following is a discussion of constituents that were detected in one or more of the City's drinking water sources at levels above the PHG, or if no PHG, above the MCLG. It should be noted that potable water is purchased to supplement the City's groundwater. The purchased water is from Metropolitan Water District (MWD) via a wholesaler (West Basin Municipal Water District).

Gross Alpha

There are radioactive materials naturally present in the Earth's crust. Over billions of years, these materials can change form and create decay products. During this change process, energy is released. Gross alpha radiation is one form of the released, and that is why it can be found in drinking water.

The drinking water MCL for gross alpha is 20 picoCuries per liter (pCi/L). Because gross alpha is associated with a group of radionuclides rather than a single constituent, OEHHA concluded that a PHG was not practical. Gross alpha is carcinogenic, so the MCLG set by the USEPA is 0 pCi/L. California's DLR is 3 pCi/L. Any data below the State's DLR is considered "non-detect" (ND). The numerical health risk at the MCL is 1×10^{-3} . This means one cancer case per 1,000 population. The numerical health risk at the MCLG is 0.

Manhattan Beach is not required to test for radionuclides on an annual basis. Sampling in 2020 for gross alpha yielded a non-detect result. Metropolitan Water District sampled during 2020 as well. Results of the purchased water had detections of gross alpha above the MCLG as shown below.

						MWD		City	
Year	Parameter	Units	MCL	MCLG	State DLR	Average	Range	Average	Range
2020	Gross Alpha	pCi/L	15	0	3	ND	ND-3	ND	--

The BAT for removal of gross alpha is reverse osmosis (RO).

Gross Beta

The radioactive materials naturally present in Earth's crust can decay over time. Beta particles are a type of radiation released as this decay process occurs. Gross beta can be naturally-occurring, but it can also come from man-made sources.

The drinking water MCL for gross beta is 50 picoCuries per liter (pCi/L). Similar to gross alpha, gross beta is also associated with a group of radionuclides rather than a single constituent, so OEHHA did not establish a PHG. Gross beta is a carcinogen, so the MCLG set by the USEPA is 0 pCi/L. California's DLR is 4 pCi/L. The numerical health risk at the MCL is 2×10^{-3} . This means two cancer cases per 1,000 population. The numerical health risk at the MCLG is 0.

Manhattan Beach follows requirements stated in Section 64442, Title 22, California Code of Regulations and is not currently required to test for gross beta. Metropolitan Water District sampled during 2020 and 2021. Results of the purchased water had detections of gross beta above the MCLG as shown below.

						MWD	
Year	Parameter	Units	MCL	MCLG	State DLR	Average	Range
2020	Gross Beta	pCi/L	50	0	4	ND	ND - 7
2021	Gross Beta	pCi/L	50	0	4	ND	ND - 6

The BAT for removal of gross beta is reverse osmosis (RO) and ion exchange (IX).

Uranium

Uranium is a naturally occurring radioactive element present in the earth's crust. Uranium is found in both groundwater and surface water due to its natural occurrence in geological formations.

The drinking water MCL for uranium is 20 picoCuries per liter (pCi/L). The PHG is 0.43 pCi/L. California's DLR is 1 pCi/L. Any data below the State's DLR is considered non-detect (ND). The Office of Environmental Health Hazard Assessment (OEHHA) developed a PHG in drinking water based on its carcinogenicity and kidney toxicity. The numerical health risk at the MCL is 5×10^{-5} . This means five cancer cases per 100,000 population. The numerical health risk at the PHG is 1×10^{-6} . This means one cancer case per 1,000,000 population.

Radiological sampling is not required annually for the City. Manhattan Beach was not required to sample groundwater for Uranium during 2019 through 2021, but previous results from 2017 and 2018 were non-detect. During the 2019-2021 period, purchased water used to supplement Manhattan Beach's groundwater had detections of uranium above the PHG as shown below.

						MWD	
Year	Parameter	Units	MCL	PHG	State DLR	Average	Range
2020	Uranium	pCi/L	20	0.43	1	ND-3	1.3

The BAT for uranium removal includes reverse osmosis (RO), ion exchange (IX), lime softening, and coagulation/filtration.

Bromate

Bromate is a byproduct of the disinfection process and occurs when bromide in the water reacts with the ozone disinfectant. Bromate consumed in drinking water in excess of the MCL over many years may cause an increased risk of cancer. Bromate is categorized as a haloacetic acid.

The MCL or State drinking water standard for bromate is 10 µg/L. The PHG is 0.1 microgram per liter (µg/L). California's DLR is 1 µg/L. Any data below the State's DLR is considered ND. The Office of Environmental Health Hazard Assessment (OEHHA) has developed a Public Health Goal for bromate in drinking water, based on its carcinogenicity. The numerical health risk at the MCL is 1×10^{-4} . This means one cancer cases per 10,000 population. The numerical health risk at the PHG is 1×10^{-6} . This means one cancer case per 1,000,000 population.

From 2019 through 2021, purchased water used to supplement Manhattan Beach's groundwater had detections of bromate levels as shown below.

						MWD	
Year	Parameter	Units	MCL	PHG	State DLR	Highest RRA*	Range
2019	Bromate	µg/L	10	0.1	1.0	5.6	ND - 8.4
2020	Bromate	µg/L	10	0.1	1.0	4.4	ND - 6.0
2021	Bromate	µg/L	10	0.1	1.0	4.5	ND - 9.8

*RAA = Running Annual Average. Highest RAA is the highest of all Running Annual Averages calculated as the average of all samples collected within a 12-month period. This is how compliance is determined for the bromate MCL.

Because bromate is a disinfection byproduct, the BAT for bromate involves control of the ozone treatment process to reduce its production.

Estimated Costs

Accurate cost estimates are difficult, if not impossible, and are highly speculative and theoretical. Levels of the constituents listed above are already below the MCLs. Furthermore, all of the detections above PHGs and MCLGs come from the purchased water, not the City's groundwater. Therefore, the City's opinion is that cost calculations are not required. It should be noted that MWD's potable water meets all State of California, DDW and USEPA drinking water standards set to protect public health.

Recommendations for Further Action

The Manhattan Beach drinking water quality meets all State of California, DDW and USEPA drinking water standards set to protect public health. To further reduce the levels of the constituents identified in this report that are already significantly below the health-based MCLs 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 not at all clear and may not be quantifiable. Additionally, because the constituents are present in the purchased drinking water, actions taken by the City may have little to no effect. Therefore, no action is proposed.

References:

California Health & Safety Code: Section 116470

California Code of Regulations. Title 22. Section 64442

Office of Environmental Health Hazard Assessment: Public Health Goals

<https://oehha.ca.gov/water/public-health-goals-phgs>

United States Environmental Protection Agency: National Primary Drinking Water Regulations

<https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations>

Attachments

1. Table of Regulated Constituents with MCLs, PHGs or MCLGs
2. Health Risk Information for Public Health Goal Exceedance Reports