LAS VIRGENES MUNICIPAL WATER DISTRICT
2022 REPORT ON WATER QUALITY
RELATIVE TO PUBLIC HEALTH GOALS
LVMWD Report No. 2818.00

Background

Provisions of the California Health and Safety Code specify that larger (>10,000 service connections) water utilities prepare a special report by July 1, 2022 if their water quality measurements have exceeded any Public Health Goals (PHGs). PHGs are non-enforceable goals established by the Cal-EPA'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 Containment Level Goals (MCLGs) adopted by the US EPA. Only constituents which have a Primary Drinking Water Standard, and, for which, either a PHG or MCLG has been set are to be addressed.

There are a few constituents that are routinely detected in water systems at levels usually well below the drinking water standards for which no PHG nor MCLG has yet been adopted by OEHHA or US EPA including Total Trihalomethanes. These will be addressed in a future report after a PHG has been adopted.

The law specifies what information is to be provided in the report.

If a constituent was detected in LVMWD's water supply between 2019 and 2021 at a level exceeding an applicable PHG or MCLG, this report provides the information required by law. Included is:

a. the numerical public health risk associated with MCL and the PHG or MCLG,
b. the category or type of risk to health that could be associated which with each constituent,
c. the best treatment technology available that could be used to reduce the constituent level, and
d. an estimate of the cost to install that treatment if it is appropriate and feasible.

What are PHGs?

PHGs are set by the California Office of Environmental Health Hazard Assessment (OEHHA) which is a part of Cal-EPA and are based solely on public health risk considerations. None of the practical risk-management factors that are considered by the US EPA or the California 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 PHGs.

Water Quality Data Considered

All of the water quality data collected in the water system between 2019 and 2021 for purposes of determining compliance with drinking water standards were considered. This data was summarized in the LVMWD's 2019, 2020 and 2021 Consumer Confidence Reports which have previously been sent to customers.

For each regulated contaminant, the DDW establishes Detection Limits for Purposes of Reporting (DLR). DLRs are the minimum levels at which any analytical result must be reported to DDW. Analytical results below the DLRs cannot be quantified with any certainty. In some cases, PHGs are set below the DLRs.

In addition to information from LVMWD's distribution system, information for Metropolitan Water District of Southern California (MWD) is also provided. MWD is the wholesaler from whom LVMWD purchases the source water distributed to customers.

Guidelines Followed

The Association of California Water Agencies (ACWA) formed a workgroup which prepared guidelines for water utilities to use in preparing these PHG reports. The ACWA guidelines were used in preparation of this report. Guidance was also available from state regulatory agencies.

Best Available Treatment Technology and Cost Estimates

Both the USEPA and CDPH 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 or feasible to determine what treatment is needed to further reduce a constituent downward to or near the PHG or the 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 lowered to zero. In some cases, installing treatment to try and further reduce very low levels of one constituent may have adverse effects on other aspects of water quality.

Constituents Detected That Exceed a PHGs or MCLGs

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

Arsenic

The PHG is 0.004 ppb. The California MCL for arsenic is 10 ppb. Arsenic is a metallic element and is a result of erosion of rocks and minerals containing arsenic. Other sources of arsenic in water include the use of agricultural pesticides and chemicals for timber preservation.

The category of health risk associated with arsenic is that people who drink water containing arsenic above the MCL for many years may experience an increased risk of cancer. The numerical health risk of ingesting drinking water with arsenic at the PHG is 1×10^{-6}, or one-in-one million excess cancer risk cases for a lifetime of exposure.

Based on sampling of the distribution system, arsenic was detected at levels between ND and 1.9 ppb. Significantly less than the MCL of 10 ppb, but higher than the PHG.

The BATs for arsenic removal is either ion exchange and/or reverse osmosis. Ion exchange is the more cost-effective of these two technologies. The estimated cost to install, lease and operate an ion exchange system that reduces arsenic levels is estimated at $16.3 million, or $801 annually per customer.

Gross Alpha Particle Activity

Although there is no PHG for gross alpha, the MCLG for gross alpha is 0 pCi/L, and the MCL is 15 pCi/L. Gross alpha is a radiological compound that is naturally occurring in the environment.

Gross alpha has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed to high levels over their lifetimes. Constituents that cause cancer in laboratory animals may also increase the risk of cancer in humans who are exposed over long periods of time. The DDW has set the drinking water standard for gross alpha at 15 pCi/L to reduce the risk of cancer or other adverse health effects that have been observed in laboratory animals.

Gross alpha particle activity was detected at levels between ND and 3 pCi/L in the source water supplied to LVMWD. Gross alpha particle activity was detected at 0.1 pCi/L during routine sampling within the LVMWD distribution system.

The BAT identified to treat radiological contaminants is reverse osmosis (RO). The most effective and economical treatment system is to use the RO treatment at select reservoir and surface water connection sites. LVMWD has determined that the cost to install and operate an RO removal system to meet the reservoir and surface water connections in the system in order to meet the PHG levels

would be approximately $17.3 million which includes construction and annual operational costs. This would be an annual cost to each customer of $848.

Uranium

The PHG for uranium is 0.43 pCi/L and the MCL is 20 pCi/L. Uranium is a metallic element which is weakly radioactive and naturally occurring in the environment.

OEHHA determined that the numerical cancer risk for uranium at the PHG level is 1×10^{-6}. Exposure to uranium and drinking water may result in toxic effects to the kidney. This constituent has also been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetime. Constituents that cause cancer in laboratory animals may also increase the risk of cancer in humans who are exposed over long periods of time.

During the monitoring period, Uranium was detected at levels between ND and 3 pCi/L in the water supplied to LVMWD's system by MWD. Uranium was detected at 1.2 pCi/L during routine sampling within the LVMWD distribution system.

As described above for gross alpha, the best available technology for uranium removal is reverse osmosis and is estimated at the annual cost of $975 per customer.

Bromate

The PHG for bromate is 0.1 ppb. The California MCL is 10 ppb. Bromate is a chemical that is formed when ozone is used to disinfect drinking water and reacts with naturally occurring bromide found in source water.

The category of health risk associated with bromate is that people who drink water containing bromate in excess of the PHG over many years may have an increased risk of cancer. The numerical health risk of ingesting drinking water with bromate at the PHG is 1×10^{-6}, or one-in-one million excess cancer risk cases for a lifetime of exposure.

During the monitoring period, bromate was detected at levels between 1.2 and 9.8 ppb in the water supplied to LVMWD's system by MWD.

The BAT for bromate is control of the ozone treatment process to reduce production of bromate. MWD continues to strive to minimize bromate production during their ozonation treatment process.

Lead and Copper

There is no MCL for lead and copper. Instead the 90th percentile value of all samples collected by LVMWD from household taps cannot exceed an Action Level of 15 ppb for lead or 1.3 ppm for copper. The PHG for lead is 0.2 ppb and the PHG for copper is 0.3 ppm. Lead and copper may leach into drinking water through the LVMWD's and residents' plumbing systems.

The category of health risk for lead is damage to the kidneys or nervous system of humans. The numerical health risk of ingesting drinking water with lead at the PHG is $<1\times10^{-6}$, or less than one-in-one million excess cancer risk cases for a lifetime of exposure. The cancer risk for copper cannot be calculated.

All of the MWD water samples for lead and copper were less than the PHG. Based on required sampling (samples taken by customers at their household tap), LVMWD's value for the 90th percentile for lead was between 4.4 and 4.8 ppb while the 90^{th} percentile for copper was 0.3 ppb.

LVMWD's water system is in full compliance with the Federal and State Lead and Copper Rule. It has been determined, according to the State regulatory requirements that LVMWD is significantly below the Action Levels for lead and copper. Therefore, the system is deemed by CDPH to have "optimized corrosion control" for the system.

In general, optimizing corrosion control is considered to be the BAT to deal with corrosion issues and with any lead and copper findings. LVMWD continues to monitor the water quality parameters that relate to corrosivity such as the pH, hardness, alkalinity, and total dissolved solids.

Since LVMWD is meeting the "optimized corrosion control" requirement, it is not necessary or prudent to initiate additional corrosion control treatment as it involves the addition of other chemicals and additional water quality issues could occur. Therefore, no estimate of cost has been included.

RECOMMENDATIONS FOR FURTHER ACTION

The drinking water quality of Las Virgenes Municipal Water District meets all State of California, Department of Public Health and US EPA 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 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 not at all clear, and may not

be quantifiable. The costs associated with incorporating additional treatment processes may be better utilized to provide greater public health protection benefits if spent in other aspects, such as operation, maintenance, and water quality monitoring programs.