Dublin San Ramon Services District
Water, wastewater, recycled water

2016 Report on Water Quality Relative to Public Health Goals

Background

The California Health and Safety Code[1] requires water utilities with more than 10,000 service connections to prepare a special report every three years if constituents in their drinking water have exceeded any Public Health Goals (PHGs). PHGs are nonenforceable goals set by the California Office of Environmental Health Hazard Assessment (OEHHA), a division of the California Environmental Protection Agency (Cal-EPA). If OEHHA has not adopted a PHG for a drinking water constituent, the law requires water utilities to use the Maximum Contaminant Level Goal (MCLG) adopted by United States Environmental Protection Agency (USEPA). This report addresses only constituents that have a California primary drinking water standard (a Maximum Contaminant Level, MCL) and either a PHG or MCLG.[2] The current report is due by July 1, 2016.

If a constituent was detected in the district's water supply between 2013 and 2015 at a level exceeding an applicable PHG or MCLG, this report provides the following information required by law:

- The numerical public health risk associated with the MCL and the PHG or MCLG, if possible to quantify
- The category or type of health risk that could be associated with each constituent
- The best treatment technology available that could be used to reduce the level of the constituent in our drinking water
- An estimate of the cost to install that treatment if it is appropriate and feasible

Public Health Goals

A Public Health Goal represents a level of concentration of a constituent that poses no significant health risk if consumed over a lifetime. PHGs are based solely on public health risk. In setting PHGs, OEHHA does not consider any of the practical risk-management factors used by the USEPA and the California Division of Drinking Water when they set enforceable drinking water standards (MCLs). These practical factors include the capability to detect and analyze constituents at very low levels, technologies available to reduce constituents to these levels, and the benefits and costs of doing so. PHGs are not enforceable, and no public water systems are required to meet them. MCLGs are the federal equivalent to PHGs.

Water Quality Data

DSRSD considered all of the water quality data collected for the district's water system between 2013 and 2015 for the purpose of determining compliance with drinking water standards. This data is summarized in our 2013, 2014, and 2015 Annual Water Quality Reports.[3]

Report Guidelines

The Association of California Water Agencies (ACWA) formed a workgroup that prepared guidelines for water utilities to use in preparing the required report. DSRSD staff used the ACWA guidelines to prepare this report. No guidance was available from state regulatory agencies.

Treatment Technologies and Estimated Costs

Both the USEPA and California Division of Drinking Water adopt what are known as Best Available Technologies. These are the best known methods of reducing contaminant levels to the MCL. Costs can be estimated for using such technologies. However, many PHGs and all MCLGs are set much lower than the MCL. It is not always possible or feasible to determine a treatment that could reduce the level of a constituent down to the level of PHG or MCLG, many of which are set at zero. Estimating the cost 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 adversely affect other aspects of water quality.

Constituents that Exceeded a PHG or MCLG

The following constituents were detected in our drinking water distribution system at levels above the PHG or MCLG.

Coliform Bacteria

During 2013, 2014, and 2015, the District collected 80 to 100 samples each month for coliform analysis. Occasionally, we found a sample positive for coliform bacteria, but follow-up resamples were negative. A maximum of 4.8 percent of these samples were positive in one month out of the three years of analysis. The MCL for coliform is 5 percent positive samples of all samples taken in a month, and the MCLG is zero.

Health risk category: Regulators created the coliform drinking water standard (MCL) to minimize the possibility of pathogens in tap water. Pathogens are organisms that cause waterborne disease. Coliform bacteria are not pathogens; rather they are surrogate indicators of the potential presence of pathogens. It is not possible to state a specific numerical health risk for coliform. While USEPA normally sets MCLGs "at a level where no known or anticipated adverse effects on persons would occur," they indicate they cannot do so with coliforms.

Coliform bacteria are ubiquitous in nature and are not generally considered harmful. Laboratories use them as indicator organisms because they are easy to monitor and analyze. If a positive sample is found, it indicates a potential problem that needs to be investigated through follow-up sampling. It is not

unusual for a water system to have an occasional positive sample. It is difficult, if not impossible, to assure a system will never have a positive sample.

Best available treatment technology: DSRSD's wholesale water provider, Zone 7 Water Agency, adds chloramine at the source to assure the water is microbiologically safe. DSRSD may add supplemental chloramine within its water distribution system. DSRSD carefully controls chloramine residual levels to provide the best health protection without causing undesirable taste and odor or increasing the level of disinfection byproducts. DSRSD and Zone 7 carefully balance treatment processes to continue supplying safe drinking water.

We use other equally important measures to prevent waterborne disease, including: implementing an effective cross-connection control program, maintaining disinfectant residual throughout our system, flushing water mains, and maintaining positive pressures in our distribution system. DSRSD has already taken all of the steps described by the Division of Drinking Water as best available technology for coliform bacteria in the California Code of Regulations, Section 64447, Title 22.

Fluoride

DSRSD has detected fluoride at levels up to 1.1 milligrams per liter (mg/L) in the water supplied through our distribution system. The USEPA MCL is 2.0 mg/L and the PHG is 1.0 mg/L. Our water system is in full compliance with the federal drinking water standard for fluoride, but the fluoride level in the system at times exceeds the PHG.

Health risk category: Some people who drink water containing fluoride above the MCL over many years may experience tooth mottling or dental fluorosis. This is why regulators adopted a drinking water standard for fluoride.

Best available treatment technology: DSRSD adds fluoride to assure our water provides optimal dental health. Fluoride's effect is topical. Small amounts of fluoride maintained in the mouth in saliva and dental plaque keeps tooth enamel strong by preventing the loss of important minerals. DSRSD carefully controls fluoride levels to provide the best protection for dental health without causing undesirable health risks. In addition, the district routinely maintain the pumps that inject fluoride throughout our system and flush water mains in our distribution system.

Lead and Copper

Currently, regulators have not established MCLs for lead or copper. Instead, regulations require that the 90th percentile value of all samples collected from a predetermined number of household taps in the distribution system not exceed an Action Level. The Action Level for lead is 15 parts per billion (ppb). The PHG for lead is 0.2 ppb. The Action Level for copper is 1.3 mg/L. The PHG for copper is 0.3 mg/L.

Regulators require DSRSD to test tap water samples from selected homes for lead and copper every three years. In water samples collected in 2013, the 90^{th} percentile value for lead was 6 ppb, which is below the Action Level of 15 ppb but over the PHG of 0.2 ppb. The 90^{th} percentile value for copper was 0.69 mg/L, which is below the Action level of 1.33 mg/L but over the PHG of 0.3 mg/L.

Health risk category: The category of health risk for lead includes chronic toxicity (adverse effects that usually develop gradually from low levels of chemical exposure over a long period of time—months to years). The cancer risk cannot be calculated at this time by OEHHA, the state agency responsible for providing that information.

The California Division of Drinking Water, which sets drinking water standards, has determined that copper is a health concern at certain exposure levels. A reddish brown metal, copper is often used to plumb residential and commercial structures that are connected to water distribution systems. Copper can contaminate drinking water as a byproduct of corrosion that occurs when copper pipes remain in contact with water for a prolonged period of time. Copper is an essential nutrient, but at high doses it has been shown to cause stomach and intestinal distress, liver and kidney damage, and anemia.

The PHGs for lead and copper are set at levels believed to cause no significant public health risk to individuals exposed to these metals over a lifetime.

Best available treatment technology: The DSRSD water system is in full compliance with the federal and state *Lead and Copper Rule*. Samples the district analyzed according to regulatory requirements have been below the Action Levels for lead and copper since 2001. The California Division of Drinking Water reviewed past residential tap results and determined that DSRSD meets "optimized corrosion control" requirements for both constituents.

In general, optimizing corrosion control is considered to be the best available technology to deal with corrosion issues and with any lead or copper findings above Action Levels. Zone 7 continues to monitor water quality parameters related to corrosivity, which include pH, hardness, alkalinity and total dissolved solids. DSRSD, in cooperation with Zone 7, maintains system conditions for "optimized corrosion control."

Since the district, in cooperation with Zone 7, is meeting requirements for "optimized corrosion control," it is not prudent to initiate additional corrosion control treatment at this time to lower the lead level. These treatments would involve adding other chemicals, which could raise additional water quality issues. Therefore, we have not included a cost estimate for additional treatment.

Recommendations for Further Action

DSRSD drinking water meets all quality standards set by the California Division of Drinking Water and USEPA to protect public health. It would require additional costly treatment processes to further reduce the levels of the constituents identified in this report, which are already significantly below the health-based Maximum Contaminant Levels established to provide "safe drinking water." It is uncertain if additional treatment processes could effectively reduce constituent levels, which are already low. The health protection benefits of these further hypothetical reductions are not at all clear and may not be quantifiable. Therefore, no action is proposed.

References

1. California Health & Safety Code, Section 116470 (b), accessed June 27, 2016, http://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=HSC&division=104.&title=&part=12.&chapter=4.&article=5.
2. "MCLs, DLRs, and PHGs for Regulated Drinking Water Contaminants," California State Water Resources Control Board Division of Drinking Water, last updated Sept. 23, 2015, http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/mclreview/mcls_dlrs_phgs.xls.
3. Dublin San Ramon Services District's 2013, 2014 and 2015 Annual Water Quality Reports, accessed on June 27, 2016, http://www.dsrsd.com/open-gov/library/environmental-permits-monitoring-reports.