City of Palo Alto 2016 Public Health Goals Report

CITY OF PALO ALTO UTILITIES
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1. Background and Key Terms

a. How is Water Quality Regulated and What are Public Health Goals?

Water quality regulations are developed by the United States Environmental Protection Agency (USEPA) and the State Water Resources Control Board (SWRCB) Division of Drinking Water. These agencies set Maximum Contaminant Limits (MCLs) for various contaminants in drinking water. In setting MCLs the USEPA and SWRCB take into consideration the best available technology for treatment of the contaminant and the technical and economic feasibility of measuring a contaminant. The City of Palo Alto (City) and its supplier, the San Francisco Public Utilities Commission (SFPUC), manage their water systems with the goal of keeping contaminants well below the MCL limit. Success in meeting that goal is summarized in the City's Annual Consumer Confidence (Water Quality) Report.

Public Health Goals (PHGs) are water quality goals established by the California Office of Environmental Health Hazard Assessment (OEHHA). They are maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health of persons would occur, allowing an adequate margin of safety. They are typically lower than MCLs. In setting the PHGs, OEHHA does not take into account any of the practical factors which are considered by the USEPA and SWRCB when setting MCLs. PHGs are non-enforceable and are not required to be met by public water systems under the California Health and Safety Code. Maximum Contaminant Level Goals (MCLGs), established by USEPA, are the federal equivalent to PHGs. The SWRCB and USEPA set MCLs as close as is feasible to PHGs and MCLGs.

b. Reporting Requirements

As described in Attachment A, every three years water agencies serving more than 10,000 service connections must prepare a brief written report if they have detected one or more contaminants in drinking water that exceed a PHG. In the report the agency must identify each contaminant detected in drinking water that exceeds the applicable PHG, disclose the public health risk for the contaminant, and the category or type of risk to health that could be associated with each contaminant. The agency must also describe the best available technology, if any is available on a commercial basis, to remove the contaminant or reduce the concentration of the contaminant, and estimate the cost of implementing that technology. The agency is required to describe any planned actions to be taken to reduce the level of the contaminant and the justification for that decision.

c. Best Available Treatment Technology and Cost Estimates

Both the USEPA and SWRCB 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 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.

d. Guidelines Followed in Preparation of this Report

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

2. City of Palo Alto Water Quality Data

a. Water supply sources

All drinking water delivered by the City during the reporting period was purchased from the City's water supplier, the SFPUC. The City maintains one active standby well and seven non-active emergency standby wells, but no water was delivered to customers from these sources, so water quality data on these sources is not included in this report.

b. Reporting Period and Data Collected

This report covers calendar years 2013, 2014, and 2015. During that time weekly tests of physical characteristics, disinfectant residual and coliform bacteria were performed. Quarterly testing of disinfection byproducts was also performed. Lead and copper were tested in 2014 according to the City's triannual schedule. The City also voluntarily monitors fluoride levels. These tests are summarized

in the 2013, 2014, and 2015 Annual Consumer Confidence (Water Quality) Reports, which can be found on the City's website at:

http://www.cityofpaloalto.org/gov/depts/utl/residents/resources/water_resources/default.asp

Source monitoring for the Hetch Hetchy water system is performed by the SFPUC. The tests done as part of the SFPUC's source monitoring program include tests for contaminants not tested for by the City, and are therefore not included in this report. Results of the SFPUC's source monitoring tests are available in that agency's Annual Water Quality Reports and Public Health Goals report. The latter report was in draft form at the time of publication of this report. The reports can be found on the SFPUC's website at:

Water Quality: http://sfwater.org/cfapps/wholesale/showlevel.cfm?nav_id=1003

Public Health Goals: http://sfwater.org/Modules/ShowDocument.aspx?documentid=9149

c. Contaminants Detected in Excess of PHGs and MCLGs

In 2013, 2014 and 2015 the only contaminant detected in excess of PHGs or MCLGs was coliform bacteria, which is discussed in more depth below. Lead was also detected at some customer taps at 1.1 parts per billion (ppb), which exceeds the PHG of 0.2 ppb, but is well below the Action Level (the equivalent of an MCL for Lead) of 15 ppb. The City does not have lead pipe or lead solder in its distribution system, and neither the City nor its supplier, the SFPUC, has detected any lead in the water it supplies. This implies that the lead would result from the household plumbing systems in the older homes sampled.

3. Discussion of Detected Contaminants

a. Coliform Bacteria

The MCL for coliform is 5% positive samples per month and the MCLG is zero.

Coliform bacteria are an indicator organism that are common in nature and are not generally considered harmful. They are used as an indicator because of the ease of monitoring and analysis. The reason for the coliform drinking water standard is to minimize the possibility that the water contains pathogens, which are organisms that cause waterborne disease. If a positive sample is found, it indicates a potential problem that needs to be investigated and follow up sampling is required. It is not unusual for a system to have an occasional positive sample. It is difficult, if not impossible; to ensure that a system will never get a positive sample. Additionally, due to the sensitive nature of the laboratory analysis method used throughout the time period, some positive results may be caused by sample contamination. Because coliform is only an indicator of the potential presence of pathogens, it is not possible to state a specific numerical health risk or public health risk category.

Between 2013 and 2015, the City collected between 84 and 105 samples each month for coliform analysis. Coliform bacteria exceeded the MCLG of zero in 10 of the 36 months, and exceeded the MCL of 5% in two of those months, resulting in public notifications. After receiving any positive test, follow up actions were taken including disassembly and disinfection of the sampling station and thorough flushing of the water mains. Repeat samples and follow-up actions were taken until evidence of coliform no longer appeared.

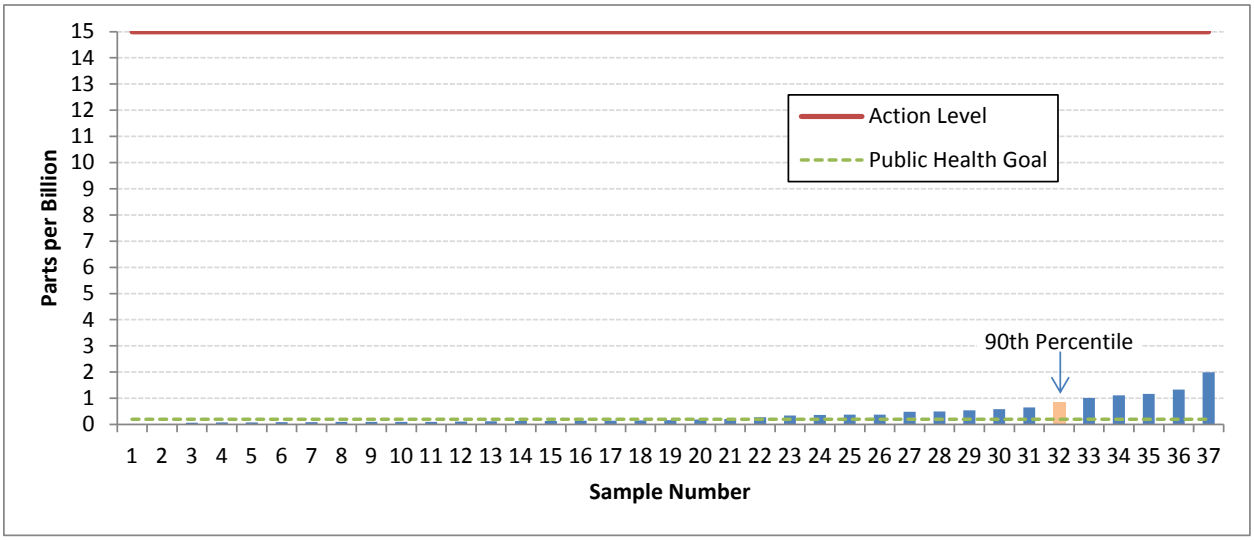
As part of routine operations, the City already takes steps described by SWRCB as "best available technology" for coliform bacteria in Title 22, CCR Section 64447, including maintenance of a disinfectant residual throughout the distribution system and proper maintenance of the distribution system. Some steps are implemented by the City's wholesale water supplier, the SFPUC, including filtration and/or disinfection of surface water supplies and regular cleaning of screens at City turnouts to reduce buildups of debris and organic material. Other equally important measures that have been implemented to protect drinking water include an effective cross-connection control program, flushing of mains and hydrants, and maintaining positive pressures in the distribution system.

There is one method that could potentially further reduce the presence of total coliform, which is to increase the amount of disinfectant residual in the distribution system. The tradeoffs include increased chemical usage and storage, a change in the taste and odor of the drinking water, and increased potential for the presence of cancer-causing disinfection byproducts. Additionally, there are limits for the maximum amount of disinfectant residual allowed in the distribution system as set by SWRCB and USEPA.

b. Lead

There is no MCL for Lead. Instead, the 90th percentile value of all samples from household taps in the distribution system cannot exceed an Action Level of 15 parts per billion (ppb) for Lead. The PHG for lead is 0.2 ppb. Lead enters drinking water primarily through corrosion of lead-containing materials in older household plumbing systems, such as those containing lead-based solder. Although the City's water sources are free of lead, and all lead piping has been removed from the City's system, several of the homes that participated in the City's 2014 Lead and Copper Sampling had lead levels that exceeded the PHG of 0.2 ppb. Results from the lead and copper sampling represent the worst case conditions for lead levels in the distribution system. These samples are collected under a first-draw condition; which means that water must sit in the customer's piping for 6 hours before it is collected. These samples were taken from homes that the City considered to be the highest risk locations and from some volunteers within the City's service territory. Lead levels at these locations may be higher than others because of the plumbing material used when these homes were built. Many of the samples collected during the lead and copper sampling tested below the PHG for lead. The probable reason for the difference in lead concentration at the individual residences can be attributed to the plumbing components at these residences or, in some cases, older brass meters.

As shown in the chart below, 20 of 37 samples collected in 2014 tested below the PHG for lead. 100% of the samples were below the Action Level. The City compares the 90th percentile value against the Action Level, and if the City does not exceed the Action Level, the City is deemed by the SWRCB to have "optimized corrosion control" for its system.



Since lead contamination generally occurs from corrosion of household lead pipes, it cannot be directly detected or removed by the City. Instead, USEPA requires water systems to control the corrosiveness of their water if the level of lead at more than 10% of home taps sampled exceeds the Action Level. The Action Level for lead has been set at 15 ppb because EPA believes, given present technology and resources, that this is the lowest level to which water systems can reasonably be required to control the contaminant should it occur in drinking water at their customers' home taps. The category of health risk for Lead includes multiple toxic effects on human body. The OEHHA revised the PHG for lead in drinking water based on new studies relating to the most sensitive health risks. These are non-carcinogenic, chronic health effects including neurobehavioral effects (decreased intelligence) in children and hypertension in adults. Lead also has the potential to cause kidney disease and cancer; however, the carcinogenic risks are considered smaller than the risks for chronic toxicity. The public health goal of 0.2 ppb was determined from a maximum daily lead intake through water ingestion of 2.86 µg/day, which corresponds to a level of concern for neurobehavioral effects (in children) designated as a decrease of one Intelligence Quotient point.

The SWRCB considers optimizing corrosion controls as the Best Available Technology (BAT) to deal with lead in drinking water. In an evaluation report dated August 4, 2006, the SFPUC concluded that pH adjustment in its system is the optimal corrosion control treatment for its water supply. The report, which was then approved by the California Department of Public Health (the responsible agency for water quality at the time), recommends a minimum pH of 8.2 be maintained throughout the

transmission and distribution system. Because the City continues to meet the Action Level for lead and operate the water system with pH greater than 8.2, the SWRCB considers that the City has achieved optimized corrosion control. Therefore, additional corrosion control treatment is not needed.

Listed below are some steps consumers can take to reduce exposure to lead:

- Have household water tested for lead.
- Find out whether household pipes contain lead or lead solder.
- Run household water for 15-30 seconds or until it becomes cold before using it for drinking or cooking; this flushes any standing lead from the pipes.
- Avoid cooking with or drinking water from the hot water tap; lead dissolves more easily into hot water.
- Avoid boiling water to remove lead; excessive boiling of water makes the lead more concentrated – the lead remains when the water evaporates.

4. Recommendations for Future Action

The City's drinking water quality meets all SWRCB and USEPA drinking water standards set to protect public health and no additional actions are proposed. 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 or replacement of customer plumbing would be required, and in some cases may have negative side effects (such as in the case of increasing disinfectant residual to reduce coliform). 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. Therefore, no action is proposed.

5. Appendix

California Health and Safety Code Section 116470

116470. (a) As a condition of its operating permit, every public water system shall annually prepare a consumer confidence report and mail or deliver a copy of that report to each customer, other than an occupant, as defined in Section 799.28 of the Civil Code, of a recreational vehicle park. A public water system in a recreational vehicle park with occupants as defined in Section 799.28 of the Civil Code shall prominently display on a bulletin board at the entrance to or in the office of the park, and make available upon request, a copy of the report. The report shall include all of the following information:

(1) The source of the water purveyed by the public water system.

(2) A brief and plainly worded definition of the terms "maximum contaminant level," "primary drinking water standard," and "public health goal."

(3) If any regulated contaminant is detected in public drinking water supplied by the system during the past year, the report shall include all of the following information:

(A) The level of the contaminant found in the drinking water, and the corresponding public health goal and primary drinking water standard for that contaminant.

(B) Any violations of the primary drinking water standard that have occurred as a result of the presence of the contaminant in the drinking water and a brief and plainly worded statement of health concerns that resulted in the regulation of that contaminant.

(C) The public water system's address and phone number to enable customers to obtain further information concerning contaminants and potential health effects.

(4) Information on the levels of unregulated contaminants, if any, for which monitoring is required pursuant to state or federal law or regulation.

(5) Disclosure of any variances or exemptions from primary drinking water standards granted to the system and the basis therefor.

(b) On or before July 1, 1998, and every three years thereafter, public water systems serving more than 10,000 service connections that detect one or more contaminants in drinking water that exceed the applicable public health goal, shall prepare a brief written report in plain language that does all of the following:

(1) Identifies each contaminant detected in drinking water that exceeds the applicable public health goal.

(2) Discloses the numerical public health risk, determined by the office, associated with the maximum contaminant level for each contaminant identified in paragraph (1) and the numerical public health risk determined by the office associated with the public

health goal for that contaminant.

(3) Identifies the category of risk to public health, including, but not limited to, carcinogenic, mutagenic, teratogenic, and acute toxicity, associated with exposure to the contaminant in drinking water, and includes a brief plainly worded description of these terms.

(4) Describes the best available technology, if any is then available on a commercial basis, to remove the contaminant or reduce the concentration of the contaminant. The public water system may, solely at its own discretion, briefly describe actions that have been taken on its own, or by other entities, to prevent the introduction of the contaminant into drinking water supplies.

(5) Estimates the aggregate cost and the cost per customer of utilizing the technology described in paragraph (4), if any, to reduce the concentration of that contaminant in drinking water to a level at or below the public health goal.

(6) Briefly describes what action, if any, the local water purveyor intends to take to reduce the concentration of the contaminant in public drinking water supplies and the basis for that decision.

(c) Public water systems required to prepare a report pursuant to subdivision (b) shall hold a public hearing for the purpose of accepting and responding to public comment on the report. Public water systems may hold the public hearing as part of any regularly scheduled meeting.

(d) The department shall not require a public water system to take any action to reduce or eliminate any exceedance of a public health goal.

(e) Enforcement of this section does not require the department to amend a public water system's operating permit.

(f) Pending adoption of a public health goal by the Office of Environmental Health Hazard Assessment pursuant to subdivision (c) of Section 116365, and in lieu thereof, public water systems shall use the national maximum contaminant level goal adopted by the United States Environmental Protection Agency for the corresponding contaminant for purposes of complying with the notice and hearing requirements of this section.

(g) This section is intended to provide an alternative form for the federally required consumer confidence report as authorized by 42 U.S.C. Section 300g-3(c).