CITY OF MOUNTAIN VIEW

PUBLIC WORKS DEPARTMENT
PUBLIC SERVICES DIVISION

2019 Water System
Public Health Goals Report

Water System No. 4310007

Calendar Years 2016-18

http://www.mountainview.gov/waterqualityPHG

TABLE OF CONTENTS

1. INTRODUCTION

The City of Mountain View tests for contaminants in its drinking water supply to comply with water quality requirements established by the U.S. Environmental Protection Agency (EPA) and the California State Water Resources Control Board (SWRCB). In addition to water quality requirements, the California Office of Environmental Health Hazard Assessment (OEHHA) and the EPA set more aggressive goals (nonregulatory requirements) to further reduce contaminants in water. This mandatory Public Health Goals Report discusses the City's water quality relative to these goals.

2. BACKGROUND

The City of Mountain View performs approximately 2,000 tests annually to ensure the quality of its water meets Federal and State standards. Additionally, the City evaluates its water relative to nonenforceable water quality goals set by the OEHHA and EPA. These goals include:

Public Health Goal (PHG): The level of a contaminant in drinking water below which there is no known or expected health risk. PHGs are nonenforceable goals established by the OEHHA and are based on health risk assessments.

PHGs are not regulatory requirements but are nonmandatory goals set at a level at which no known or anticipated adverse effects on health will occur with an adequate margin of safety. PHGs are established based on numerous criteria, including consideration of possible synergistic effects resulting from exposure to two or more contaminants and consideration of potential adverse effects on members of subgroups that comprise a meaningful proportion of the population, including, but not limited to, infants, children, pregnant women, the elderly, and individuals with a history of serious illness. PHGs for cancer-causing chemicals are typically established at a risk level that one person in a population of one million people drinking the water daily for 70 years would be expected to develop cancer as a result of exposure to that chemical.

The process for establishing a PHG for a chemical contaminant in drinking water is rigorous. OEHHA scientists first compile all relevant scientific information available, which includes studies of the chemical's effects on laboratory animals and studies of humans who have been exposed to the chemical. The scientists use data from these studies to perform a health risk assessment in which they determine the levels of the contaminant in drinking water that could be associated with various adverse health effects. When calculating a PHG, the OEHHA uses all the information it has compiled to identify the level of the chemical in drinking water that would not cause significant adverse health effects in people who drink

that water every day for 70 years. The OEHHA must also consider any evidence of immediate and severe health effects when setting the PHG.

For cancer-causing chemicals, the OEHHA typically establishes the PHG at the "one-in-one million" risk level. At that level, not more than one person in a population of one million people drinking the water daily for 70 years would be expected to develop cancer as a result of exposure to that chemical.

State law requires the SWRCB to set drinking water requirements for chemical contaminants as close to the corresponding PHG as is economically and technologically feasible. PHGs adopted by the OEHHA are reviewed at least once every five years and revised as necessary based on the availability of new scientific data. There are no penalties for exceeding PHGs.

Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected health risk. MCLGs are set by the EPA and allow for a margin of safety. MCLGs are unenforceable, and there are no penalties or action required for exceeding an MCLG.

Maximum Contaminant Level (MCL): MCLs may be established be either the EPA or SWRCB, and are the highest level of a contaminant that is allowed in drinking water. Primary MCLs (those that address health concerns) are set as close to PHGs (or MCLGs if no PHG exists) as is economically and technologically feasible. Secondary MCLs are set to regulate the odor, taste, and appearance of drinking water. MCLs established by the SWRCB must be at least as stringent as the Federal MCL, if one exists. An MCL is a regulation to be met by public water systems which specifies the maximum allowable content of a contaminant in drinking water. MCLs take into account not only chemicals' health risks, but also factors such as their detectability and treatability, as well as costs of treatment. California Health and Safety Code requires a contaminant's MCL to be established at a level as close to its PHG as is technologically and economically feasible, placing primary emphasis on the protection of public health.

3. REPORTING REQUIREMENTS

The California Health and Safety Code Section 116470 (Attachment 1) requires California water retailers serving more than 10,000 service connections to prepare a report every three years informing consumers of water quality contaminants (that have a set MCL) that exceeded the corresponding PHG or MCLG during the reporting period. Many contaminants with established MCLs do not have corresponding PHGs. For these contaminants, the City is required to report on exceedances of MCLGs if one exists. The City's last PHG report was published in

July 2016 and included information on lead and hexavalent chromium exceedances.

The City used guidance provided by the OEHHA to prepare this report. The Association of California Water Agencies (ACWA) released updated guidelines in March 2019 that the City also used as a reference.

The City's water met all primary and secondary water quality regulatory requirements during 2016-18, and the City incurred no water quality violations. Routine water quality testing identified two contaminants, lead and Gross Alpha Particles, at levels exceeding PHGs or reporting limits. To meet regulatory requirements, the City must issue a Public Health Goals Report and conduct a public hearing to take comments on the report. In accordance with State law, the report must include the following elements:

For each exceedance, the PHG report must by law include the following information:

- The identification of each contaminant detected in drinking water that exceeds the applicable PHG during the last three years.

- The MCL and PHG as determined by OEHHA for each contaminant identified.

- The category or type of risk to health that could be associated with each contaminant identified.

- The Best Available Technologies (BATs) commercially available, if any, that could be used to reduce the contaminant level, and an estimate of the cost to utilize that treatment if it is appropriate and feasible.

- A description of the action, if any, public water systems intend to take to reduce the concentration of the contaminant.

Water Quality Data Reviewed for this Report

The City reviewed water quality data for 2016 through 2018 to determine compliance with PHGs and MCLGs. This data was summarized in the City's 2016, 2017, and 2018 Annual Water Quality Reports, also known as Consumer Confidence Reports (CCRs). Notification of the availability of the CCRs was mailed to all of City of Mountain View water customers through direct mail. The CCRs are available on the City's website or a hardcopy is provided upon request.

4. CONTAMINANT LEVELS THAT EXCEEDED PHGs OR MCLs

This report contains required information for contaminant levels in the City's water supply. The City is reporting on two contaminants:

1. Lead—exceeded PHG

2. Gross Alpha Particles—exceeded MCLG

A table summarizing the required elements and a more detailed discussion of the contaminants is provided below.

Lead: Summary

Standards and goals	PHG: 0.0002 (mg/l) – 0.2 parts per billion (ppb). Action level: If more than 10 percent of the City's samples exceed 15 ppb, the City must take measures to reduce water corrosivity.
Measured amounts	Three of 34 samples (less than 10 percent) exceeded the action level.
Sources of contaminant	Occurs in drinking water primarily as a consequence of leaching from plumbing containing lead.
Health risk	Numerous impacts, including decreased intelligence in children and increased blood pressure in adults. Lead is also a carcinogen in animals and a probable carcinogen in humans.
BAT to reduce	Corrosion control through a minimum pH of 8.2 for water in the distribution system.
Cost to reduce	N/A. Corrosion control measures are in place.
Source of cost estimate	N/A.
Steps to reduce contaminant levels	None planned. The City's water meets all health requirements.

Lead: Overview

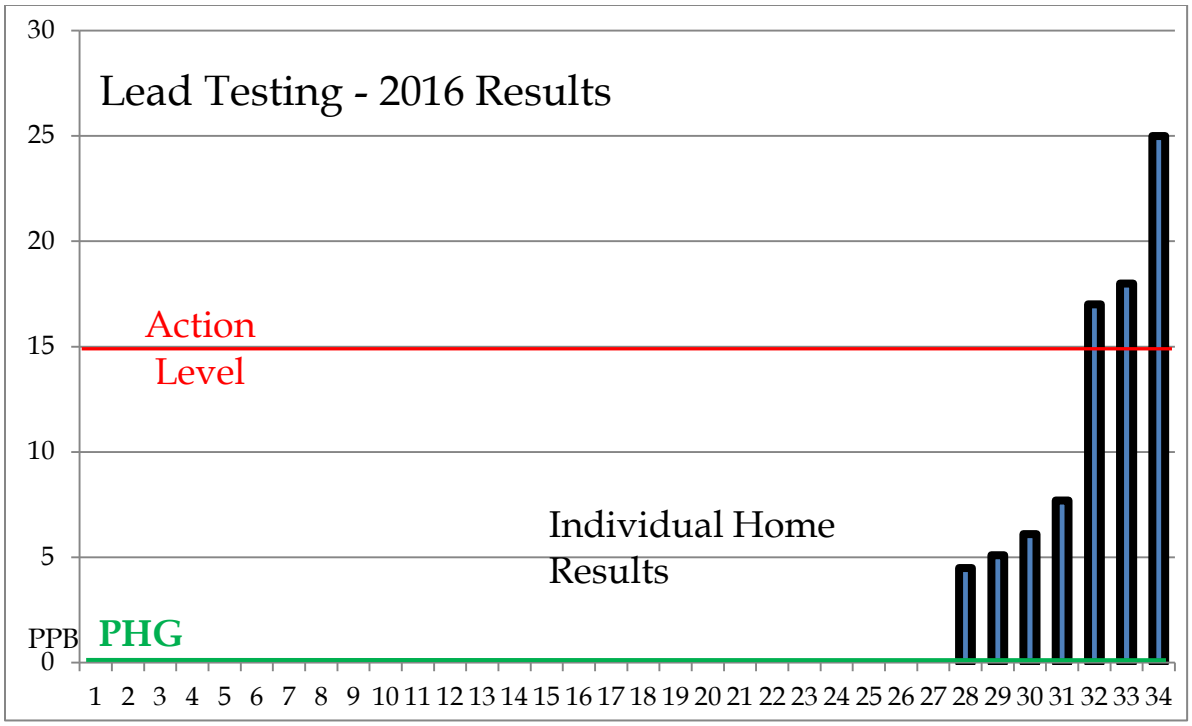
Lead is a metallic element which has been used for many years in piping, paints, cable coverings, bullets, radiation shielding material, and as a gasoline additive. Lead is a widespread contaminant and occurs in drinking water primarily as a

consequence of corrosion and leaching from plumbing and fixtures containing lead. Lead has multiple toxic effects, including decreased intelligence in children and increased blood pressure in adults. Lead is also a carcinogen in animals and a probable carcinogen in humans.

Effective June 19, 1986, Federal regulations, established in the Safe Drinking Water Act, defined the allowable content of lead in pipes, solder, or flux to be considered "lead free." The regulations also required future installation use these "lead-free" components in public water systems or any residential or nonresidential facility that was connected to a public water system and provided water for human consumption. California further reduced the allowable amounts of lead as of January 1, 2010, and in 2011, Congress passed the Reduction of Lead in Drinking Water Act, matching California's standard. New pipe and meter installations in the City distribution system meet all requirements for lead-free plumbing materials.

The OEHHA has established a lead PHG of 0.2 parts per billion (ppb), and the EPA adopted an MCLG of zero for lead in drinking water based on associated health impacts and because the EPA classifies lead as a "probable human carcinogen." The EPA has not adopted an MCL for lead in drinking water because the source of lead in water is typically from home or building plumbing and not under the control of water suppliers. As an alternative, the EPA established a treatment technique, an enforceable procedure or level of technological performance which water systems must follow to ensure control of a contaminant. The EPA has also set an "action level" for lead in drinking water of 15 ppb, the level the EPA believes is feasible for public water systems to attain by such measures as adjusting the physical characteristics of the water to reduce the water's corrosivity. If lead concentrations exceed 15 ppb in more than 10 percent of customer taps sampled, the water system operator must undertake additional actions to control corrosion.

The City tests lead levels at approximately 30 to 40 residences every three years as required by the SWRCB. During tests conducted in 2016 lead levels exceeded the PHG of 0.2 ppb at seven of 34 residences tested. Three samples exceeded the action level of 15 ppb (less than 10 percent of the samples), so the City is not required to take any action. Residents participating in the testing program were provided with test results from their residence, as well as information regarding how to address related water quality concerns such as additional testing inside their home. The test results are displayed below:



Most 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 the lead content of the customer's plumbing components

Lead: Best Available Technologies

The SWRCB considers optimizing corrosion control as the BAT for reducing lead in drinking water, recommending a minimum pH of 8.2 be maintained throughout the distribution system. From 2016 to 2018, the pH of the water supplied by the San Francisco Public Utilities Commission (SFPUC) averaged 8.9. The pH of the water supplied by the Santa Clara Valley Water District (SCVWD) averaged 7.7 but is treated with corrosion inhibitors and considered to be compliant with BATs. The pH of water produced from City wells ranged from 7.5 to 7.8. Approximately 2 percent of the City's water supply is generated by wells, and well water mixes with SFPUC water, so no additional action to increase the pH of the well water is necessary.

Another lead reduction strategy is to replace the portions of lead service lines (lines that connect distribution mains to customers) that are under the water system's control. During the last several years City staff reviewed the water distribution system infrastructure and determined there are no lead service lines in the water system. There are lead joints scattered throughout the distribution

system in areas with older water mains; these joints are replaced during main breaks and through annual water main replacement capital improvement projects.

Although the City is not required to test for lead in the distribution system, during the 2016 lead testing process City staff conducted limited tests of distribution system water and no lead was detected. Additionally, 27 of the 34 lead testing samples in 2016 contained no lead, indicating the City is delivering water with no lead content. City staff also conducted limited distribution system testing in 2018 during school lead testing and no lead was detected.

Consumer Actions to Reduce Lead Exposure

The following are 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 to 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 lead more concentrated—the lead remains when the water evaporates.

Gross Alpha Particles: Summary

Standards and goals	MCL: 15 pCi/l PHG: None MCLG: 0.0 pCi/l
Measured amounts	4.3 pCi/l in one well sample (2018) during well start-up testing.
Sources of contaminant	Naturally occurring (granitic formations, sandstone aquifers, shales, phosphate deposits) and manmade sources including industry (labs, pharmaceuticals).
Health risk	Damage to tissue, increased risk of cancer.
BAT to reduce	Mixing with other water sources or identifying and removing impacted water source.

Cost to reduce	N/A.
Source of Cost estimate	N/A.
Steps to reduce contaminant levels	None planned. The City's water meets all health requirements.

Gross Alpha Particles: Overview (Source: OEHHA)

Radionuclides are naturally occurring elements of the earth present (usually at very low levels) in every substance and material on the planet and may sometimes include several different isotopic version of the same element. Isotopes are atoms of an element with differing atomic masses (specifically, different numbers of neutrons). Gross Alpha is a radioactive element present in the environment; most radiation in groundwater is the result of interactions with geologic materials that contain trace levels of radioactive isotopes.

Alpha particles are a type of radiation emitted by some radionuclides. They consist of two protons and two neutrons. Their travel range is only a few centimeters. Once alpha particles lose energy, they pick up electrons and become helium. U-238, Ra-226, and Rd-222 are examples of alpha particle emitters. Alpha emitters are used to treat cancer as a static eliminator in paper mills and other industries and in smoke detectors.

The health effect of alpha particles depends upon how exposure takes place. External exposure is far less of a concern than internal exposure because alpha particles lack the energy to penetrate the outer dead layer of skin. If alpha emitters have been inhaled, ingested, or absorbed into the blood stream, living tissue may be exposed. Exposure of living tissue to alpha radiation is associated with an increased risk of cancer, in particular lung cancer (inhalation). The greatest exposure to alpha radiation comes from the inhalation of radon and its decay products, several of which also emit potent alpha radiation.

Gross Alpha Particles: Best Available Technology

In general, mitigation of drinking water that exceeds a State or Federal radionuclide standard is complicated, because traditional water treatment processes and disposal methods cannot be routinely implemented. Residuals and wastewater derived from the treatment process for these types of contaminants cannot be easily disposed. Water systems with sources that exceed drinking water standards for radionuclides may consider implementing the measures summarized below to comply with drinking water quality regulatory requirements.

- Mixing Solution: Interconnect with other non-impacted water systems in the area. This option often may be the most cost-effective approach to resolving water quality problems for the long-term. Depending on the water quality and yield of each source, water from different sources may be blended to meet drinking water standards, or new sources may be developed.

- Geologic solution: Determine if certain water bearing zones can be isolated to improve water quality and comply with radionuclide regulatory requirements.

5. NEXT STEPS

The City of Mountain View will continue to monitor and protect water sources as required by State and Federal regulations. Because the best available technologies are currently in place for lead and Gross Alpha Particle exceedances, the City does not intend to implement additional treatment measures.

6. CONCLUSION

The drinking water for the City of Mountain View meets all standards established by the SWRCB and EPA. Additionally, the City is currently using the best available technologies to minimize the levels of lead and Gross Alpha Particles. Therefore, no further action is proposed.

Additional information regarding lead and Gross Alpha Particles can be found on the OEHHA and SWRCB websites at:

Lead:
www.oehha.ca.gov/media/downloads/water/chemicals/phg/leadfinalphg042409_0.pdf

Gross Alpha Particles:
www.waterboards.ca.gov/water_issues//programs/gama/docs/coc_radionuclides.pdf

Additional information regarding the City of Mountain View's water quality can be found at:

General water quality information:
https://www.mountainview.gov/depts/pw/services/water/quality.asp

This page provides links to the City's current and historical Consumer Confidence Reports (water quality reports)

GH/6/PSD
761-05-14-19R

Attachment: 1. Health and Safety Code: Section 116470

NOTE: This publication is meant to be an aid to the staff of the CDHS Drinking Water Program and cannot be relied upon by the regulated community as the State of California's representation of the law. The published codes are the only official representation of the law. Refer to the published codes whenever specific citations are required.

Health and Safety Code §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).