

CITY OF INGLEWOOD

Report on Water Quality Relative to Public Health Goals

June 2010

Background:

Provisions of the California Health and Safety Code (Reference No. 1) specify that larger (>10,000 service connections) water utilities prepare a special report by July 1, 2010 if their water quality measurements have exceeded any Public Health Goals (PHGs). PHGs are non-enforceable goals established by the California Environmental Protection Agency (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 Contaminant Level Goals (MCLGs) adopted by United States Environmental Protection Agency (USEPA). Only constituents which have a California primary drinking water standard and for which either a PHG or MCLG has been set are to be addressed. (Reference No. 2 is a list of all regulated constituents with the MCLs and PHGs or MCLGs.)

If a constituent was detected in the City Water System between 2007 and 2009 at a level exceeding an applicable PHG or MCLG, this report provides the information required by the law. Included in this report is the numerical public health risk associated with the MCL and the PHG or MCLG, the category or 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 PHGs?

PHGs are set by OEHHA which is 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 USEPA or the California Department of Public Health (CDPH) in setting drinking water standard 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 to PHGs.

Water Quality Data Considered:

All of the water quality data collected by our water system between 2007 and 2009 for purposes of determining compliance with drinking water standards was considered. This data is summarized in City's 2007, 2008, and 2009 Annual Water Quality Reports which were mailed to all of our customers in compliance with regulations.

Guidelines Followed:

The Association of California Water Agencies (ACWA) formed a workgroup which prepared guidelines for water utilities to use in preparing these reports. The ACWA

guidelines were used in the preparation of this report. No guidance was available from state regulatory agencies.

Best Available Treatment Technology and Cost Estimates:

Both the USEPA and CDHS 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.

Constituents Detected That Exceed a PHG or a MCLG:

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

Arsenic:

Arsenic has been detected at levels up to 3.2 micrograms per liter (ug/l) in the surface water supplied to the system from Metropolitan Water District through West Basin Municipal Water District. No arsenic has been detected in the cities ground water supplies, which is blended with the supplied source, further lowering the arsenic level. The California MCL is 10.0 micrograms per liter and the PHG is 0.004 micrograms per liter. The City's water system has been in full compliance with Federal and State drinking water standard for the MCL of arsenic.

The category of health risk associated with arsenic, and the reason that a drinking water standard was adopted for it, is that people who drink water containing arsenic above the MCL throughout their lifetime could experience an increased risk of getting cancer. The numerical health risk associated with the PHG is one excess cancer case per million people.

The Best Available Technologies (BATs) for removing arsenic to below the MCL are activated alumina, ion exchange, lime softening, coagulation/filtration and reverse osmosis (RO). The most effective method to consistently remove arsenic to below the PHG is to install RO treatment systems at our surface water connection sites where the water can exceed the PHG. The City customers consume approximately 9,000 acre-ft of water in a year which is equivalent to 2,925 million gallons (MG). The approximate cost of treating arsenic using RO process is \$2.50 per 1,000 gallons. The approximate cost to remove arsenic to below the PHG would be approximately \$7.3 million for the City's Water System. This translates into an additional cost of \$1.85 per unit (100 cubic feet) increase on water rates.

Coliform Bacteria:

During the three year period from January 2007 through December of 2009 the department collected between 100 and 125 routine samples each month for coliform

analysis. Occasionally, a sample analysis resulted in an indication for coliform bacteria presence. Protocols were followed, which requires the department to reanalyze the same site and additional sites, which were conducted, and the reanalysis resulted in absent indications of coliform bacteria on all samples. A maximum of 1% of these initial routine sample analysis resulted in a present indication of coliform bacteria during a month.

The MCL for coliform is 5% positive samples of all samples per month and the MCLG is zero. The reason for the coliform drinking water standard is to minimize the possibility of the water containing pathogens which are organisms that cause waterborne disease. Because coliform is only a surrogate indicator of the potential presence of pathogens, it is not possible to state a specific numerical health risk. While USEPA normally sets MCLGs “at a level where no known or anticipated adverse effects on persons would occur”, they indicate that they cannot do so with coliforms.

Coliform bacteria are an indicator organism that are ubiquitous in nature and are not generally considered harmful. They are used because of the ease in monitoring and analysis. If a positive sample is found, it indicates a potential problem that needs to be investigated and follow up sampling done. It is not at all unusual for a system to have an occasional positive sample. It is difficult, if not impossible; to assure that a system will never get a positive sample. The chlorine residual levels are carefully controlled to provide the best health protection without causing the water to have undesirable taste and odor or increasing the disinfection byproduct level. This careful balance of treatment processes is essential to continue supplying our customers with safe drinking water.

Other equally important measures that we have implemented include: an effective cross-connection control program, maintenance of a disinfectant residual throughout our system, an effective monitoring and surveillance program and maintaining positive pressures in our distribution system. Our system has already adopted all of the steps described by CDPH as “best available technology” for coliform bacteria in Section 64447, Title 22, CCR.

Copper

There is no MCL for Copper. Instead the 90th percentile value of all samples from household taps in the distribution system cannot exceed an Action Level of 1.3 mg/l for copper. The PHG for copper is 0.3 mg/l.

The category of health risk for copper is gastrointestinal irritation. Numerical health risk data for copper has not yet been provided by OEHHA, the State agency responsible for providing that information.

All of our source water samples for copper in 2008 were less than the PHG. Based on extensive sampling of our distribution system in 2008, our 90th percentile value for copper was 0.77 mg/l. No results exceeded the Action Level.

Our water system is in full compliance with the Federal and State Copper Rule. Based on our extensive sampling, it was determined according to State regulatory requirements that we meet the Action Level for Copper. Therefore, we are deemed by CDPH to have “optimized corrosion control” for our system.

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. We continue to monitor our water quality parameters that relate to corrosivity, such as the pH, hardness, alkalinity, total dissolved solids, and will take action if necessary to maintain our system in an “optimized corrosion control” condition.

Since we are meeting the “optimized corrosion control” requirements, it is not prudent to initiate additional corrosion control treatment as it involves the addition of other chemicals and there could be additional water quality issues raised.

Gross Alpha Particle Activity

Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Gross alpha particle activity has been detected at 4.7 picoCuries/l (pCi/l) in the Water System. There is no PHG for gross alpha particle activity. The MCLG is 0 pCi/l, and the MCL is 15 pCi/l. The levels detected in our system were below the MCL at all times.

The CDPH and USEPA, which set drinking water standards, have determined that gross alpha particle activity is a health concern at certain levels of exposure. This radiological constituent is a naturally occurring contaminant in some ground and surface water supplies. The category of health risk associated with gross alpha particle activity, and the reason that a drinking water standard was adopted for it, is that some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer. The numerical health risk for the MCLG of zero pCi/l is zero. CDPH and USEPA set the drinking water standard for gross alpha particle activity at 15 pCi/l to reduce the risk of cancer or other adverse health effects.

The Best Available Technology (BATs) identified to treat gross alpha particle activity is RO. The most effective method to consistently remove gross alpha particle activity to the MCLG is to install RO treatment systems at our surface water connection sites where the water exceeds the MCLG. The annualized capital operational and maintenance cost to remove gross alpha particle activity to below the MCLG would be approximately \$7.3 million. This translates into an additional cost of \$1.85 per unit (100 cubic feet) increase on water rates.

Uranium

Uranium has been detected at level of 2.7 pCi/l in the surface water supplied to the city. The PHG for uranium is 0.43 pCi/l, and the MCL is 20 pCi/l. The levels detected in our system were below the MCL at all times.

The CDPH and USEPA, which set drinking water standards, have determined that uranium is a health concern at certain levels of exposure. This radiological constituent is a naturally occurring contaminant in some groundwater and surface water supplies. The category of health risk associated with uranium, and the reason that a drinking water standard was adopted for it, is that some people who drink water containing uranium in excess of the MCL over many years may have an increased risk of getting cancer. The numerical health risk associated with the PHG of 0.43 pCi/l is one excess cancer case per million people. CDPH set the drinking water standard for uranium at 20 pCi/l to reduce the risk of cancer or other adverse health effects.

The Best Available Technology (BAT) identified to treat uranium is reverse osmosis (RO). The most effective method to consistently remove gross alpha particle activity to the PHG is to install RO treatment systems at our surface water connection sites where the water exceeds the PHG. The annualized capital operational and maintenance cost to remove gross alpha particle activity to below the PHG would be approximately \$7.3 million. This translates into an additional cost of \$1.85 per unit (100 cubic feet) increase on water rates.

Bromate

Bromate has been detected at level of 6.9 ug/l in the surface water supplied to the city. The PHG for bromate is 0.1 ug/l and the MCL for bromate is 10 ug/l. The levels detected in our system were below the MCL at all times.

The CDPH and USEPA, which set drinking water standards, have determined that bromate is a health concern at certain levels of exposure. The category of health risk associated with bromate, and the reason that a drinking water standard was adopted for it, is that some people who drink water containing bromate in excess of the MCL over many years may have an increased risk of getting cancer. The numerical health risk associated with the PHG of 0.1 ug/l is one excess cancer case per million people. CDPH set the drinking water standard for bromate at 10 ug/l to reduce the risk of cancer or other adverse health effects.

The Best Available Technology (BAT) identified to treat bromate is reverse osmosis (RO). The most effective method to consistently remove bromate to the PHG is to install RO treatment systems at our surface water connection sites where the water exceeds the PHG. The annualized capital operational and maintenance cost to remove bromate to below the PHG would be approximately \$7.3 million. This translates into an additional cost of \$1.85 per unit (100 cubic feet) increase on water rates.

RECOMMENDATIONS FOR FURTHER ACTION:

The drinking water quality of the City of Inglewood meets all State of California, Department of Public Health 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 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. Therefore, no action is proposed.

REFERENCES: (Attached)

1. Relevant portion of California Health and Safety Code Section 116470 (b).
2. Table of Regulated Constituents with MCLs, PHGs, or MCLGs
3. Inglewood's 2007, 2008 and 2009 Water Quality Reports