CITY OF LOS BANOS
HEXAVALENT CHROMIUM
COMMUNITY UPDATE

City of Los Banos
At the Crossroads of California

PROVOST& PRITCHARD

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1 BACKGROUND

The purpose of this document is to provide information to help City of Los Banos water customers understand the new California hexavalent chromium drinking water regulation and how it affects them.

In 2014, the state of California adopted a new drinking water regulation limiting the amount of hexavalent chromium in drinking water. That regulation was challenged in court and ultimately rescinded in 2017. On June 16th, 2023 the state again proposed a regulation limiting the amount of hexavalent chromium in drinking water. That regulation went into effect October 1st 2024. The new regulation limits hexavalent chromium in drinking water to 10 parts per billion (ppb), which is the same level set in 2014. One part per billion is approximately equivalent to one drop in an Olympic-size swimming pool.

The City of Los Banos is impacted by this new regulation because the level of hexavalent chromium in all of the City's wells exceeds 10 ppb. The City has been proactively working to find a solution to the problem since the draft regulation was first announced. This Community Update describes the issue and the steps the City is taking to comply with this new regulation.

2 WHAT IS HEXAVALENT CHROMIUM?

Chromium is a metallic element found in rocks, soils, plants, and animals. It is the 21st most abundant element in the Earth's crust. Naturally-occurring chromium occurs extensively. It also has industrial uses in steel making, metal plating, leather tanning, corrosion inhibitors, paints, dyes, and wood preservatives.

Chromium exists in several forms including trivalent, hexavalent, and metallic forms. Trivalent chromium is considered an essential nutrient. The state of California has identified hexavalent chromium as a carcinogen when ingested. Hexavalent chromium occurs in groundwater contaminated by natural sources as well as from man-made contamination. Chromium can be naturally converted back and forth between the trivalent and hexavalent forms under certain conditions.

Hexavalent chromium is referred to using many formal and informal terms. The terms hexavalent chromium, chrome six, Cr(VI), and Cr +6 all refer to the same substance and are used interchangeably.

Most political, media, and research attention has focused on hexavalent chromium pollution from industrial activities. Man-made contamination at the California community of Hinkley was the basis for the 2000 movie *Erin Brockovich*, which heightened public awareness of hexavalent chromium. It should be noted that the hexavalent chromium levels detected at Hinkley were as high as 7,800 ppb as compared to the approximately 20 – 40 ppb range detected in the City's wells. As will be discussed below, the hexavalent chromium in the City of Los Banos' wells also differs from Hinkley in that it is naturally occurring, not man-made.

3 HOW IS CHROMIUM REGULATED?

Drinking water quality in Los Banos is regulated by the California State Water Resources Control Board – Division of Drinking Water. The Division of Drinking Water is required to set and enforce drinking water standards that are at least as stringent as those set by the US EPA, but may also set more stringent standards that apply to California only. Prior to October 1st 2024 total chromium (including both hexavalent and trivalent chromium) in drinking water was regulated to a concentration of 100 ppb at the national level and to a more stringent 50 ppb level in California. The City of Los Banos was in compliance with the more stringent 50 ppb California regulation at all times. However, the City does not comply with the new lower 10 ppb limit that was adopted on October 1st, 2024. Water systems have been given a period of time to come into compliance with the new regulation before they are issued a notice of violation. The amount of time they have been given depends on the size of the system. In the case of Los Banos, the City was given until October 1st 2026 to be in compliance.

It is worth noting that the water being served in Los Banos would meet all drinking water standards anywhere else in the United States except for California. The other 49 states only limit total chromium levels to 50 ppb and in many cases to 100 ppb and do not specifically regulate the hexavalent form. The World Health Organization has also set a guideline value for total chromium of 50 ppb.

4 WHAT ARE THE HEALTH EFFECTS?

The City of Los Banos cannot comment on the effects of hexavalent chromium consumption on human health except to refer citizens to the California's published Public Health Goal, which is 0.02 ppb. The Public Health Goal is the level of hexavalent chromium in drinking water that would cause less than a one-in-one million risk of cancer in adults who drink two liters (approximately ½ gallon) of that water every day for 70 years. Hexavalent chromium has not been established as an ingested carcinogen at the national level.

California drinking water regulations require that the City notify all consumers of the hexavalent chromium limit exceedance four times per year and that the notification include the following health effects language:

> "Some people who drink water containing hexavalent chromium in excess of the MCL over many years may have an increased risk of getting cancer."

Further questions regarding health effects should be addressed to the Merced District Engineer with the California State Water Resources Control Board – Division of Drinking Water:

(559) 447- 3316
265 W. Bullard Avenue, Suite 101
Fresno, CA 93704

Specific medial concerns should be discussed with a licensed medical professional.

5 WHERE DID THE HEXAVALENT CHROMIUM COME FROM?

Geological conditions on the west side of the Central Valley, near the Coastal Mountain Range, are known to create the potential for hexavalent chromium contamination of groundwater when water flows underground through minerals that naturally contain chromium. Los Banos is located within this area. Levels of hexavalent chromium above the drinking water limit have been detected along the Coastal Range from Los Banos to at least as far north as Patterson. Such a large area of contamination is likely to be naturally occurring and there is no record of any industrial discharge of hexavalent chromium that would affect the City's groundwater wells.

The City hired a consultant to study the hexavalent chromium levels in the vicinity of Los Banos to determine if there are any obvious signs of man-made hexavalent chromium contamination. The study found strong evidence for the hexavalent chromium in Los Banos' water being naturally occurring and no evidence of any man-made contamination. The City is committed to pursuing any scientific evidence of man-made contamination.

At the time the regulation went into effect, the State anticipated that at least 233 water systems in California would be affected by the regulation. Other areas of California that are most significantly impacted by what appears to be naturally occurring hexavalent chromium contamination are the Coachella Valley and the area around the cities of Woodland and Davis. Areas with significant man-made Hexavalent chromium contamination include the Hinkley and Topock PG&E gas compressor station sites in Southern California and the San Fernando Valley Superfund Site north of Los Angeles. The City of Los Banos is perhaps the City most greatly impacted by the new regulation since all of the City's wells are over the new limit. Most other impacted water systems have alternative sources of drinking water that are not over the hexavalent chromium limit. Additionally, communities that are impacted by man-made contamination have the ability to seek compensation from the polluter; an option not available to Los Banos due to the natural origin of the hexavalent chromium.

6 COULD THE CONTAMINATION HAVE COME FROM AGRICULTURAL PESTICIDE OR FERTILIZER USE?

There is no evidence that hexavalent chromium was ever used as an active or inactive ingredient in agriculturally applied pesticides. Chromium is used as a component of wood preservatives/pesticides including chromated copper arsenate (CCA) and acid copper chromate (ACC). However, these preservatives are applied to lumber to protect the wood from insect damage and are not applied to agricultural fields or crops. Based on the best science available to the City, there is also no evidence that fertilizer use has caused or contributed to the hexavalent chromium contamination at Los Banos. All available evidence indicates that the hexavalent chromium is naturally occurring.

7 WHAT HAS THE CITY ALREADY DONE?

The City has been proactively responding to the new regulation since the Notice of Proposed Rulemaking was published on June 16, 2023. Prior to that date the City did not know what the new limit would be or if the City's water system would comply with the new limit. The City has retained an engineering consultant to evaluate alternatives to bring the City into compliance with the new standard and to assist with preparing a Compliance Plan. Investigations into the source of the hexavalent chromium and the viability of constructing new wells have been completed. An extensive treatment pilot study of a water treatment process is planned for early summer of this year. The City is also investigating potential sources of funding assistance to help cover the high costs of responding to this regulation.

8 WHAT SOLUTIONS ARE BEING CONSIDERED?

The City and its consultants have evaluated several potential solutions to the problem including:

1. Constructing new water supply wells that produce water that is under the hexavalent chromium limit;
2. Obtaining rights to surface water and constructing a surface water treatment plant; and
3. Treating the City's existing water supply wells to remove hexavalent chromium.

Based on the results of completed studies, the City believes that treatment of the existing wells to remove hexavalent chromium is the most cost effective and timely solution to bringing the system into compliance with the new regulation.

9 WHAT IS THE CITY'S PLAN TO RESOLVE THE PROBLEM?

An important element of the City's response is to seek out and obtain any available funding assistance. Preliminary cost estimates to treat the City's wells to remove hexavalent chromium predicted construction costs of approximately 65 million dollars. The estimated cost to operate treatment plants at the City's wells is 1 million dollars annually. This compares to a current annual City water fund of less than 4 million dollars. Because of the tremendous financial challenge that this new regulation creates, the City is applying for Safe Drinking Water State Revolving Fund (SRF) grants and loans, and is seeking other grant and low interest loan funding from the state and federal government to help pay for engineering studies, testing, design, and construction of the required water system improvements. There are no federal or state programs to assist with operating costs once the facilities are constructed. Based on the costs to construct and operate new treatment facilities and the limitations on available funding from state and federal sources, the City will have to engage in a rate study and evaluate limited rate increases that consider the City's median household income.

The City is currently developing a Compliance Plan that will be submitted to and approved by the State Division of Drinking Water. That plan will be structured to balance the desire for a quick solution to the problem with the City's fiscal responsibility to minimize rate impacts to water users. It is anticipated that the Compliance Plan will be broken out into three phases:

1. Phase 1 of the plan will involve testing the proposed treatment process to confirm that it is effective, reliable, and cost-effective relative to the competing processes.
2. Phase 2 will involve design of as many as 13 treatment plants to treat all of the City's wells.
3. Phase 3 will involve constructing and starting up the treatment plants.

Completing these steps will take time. The October 1, 2026 deadline established by the Division of Drinking did not take into account the number of wells that might be impacted. Due to the need to treat all 13 of its wells, its entire water supply, the City anticipates that it will attain compliance with the new regulation in late 2028.