

**Final Statement of Reasons**  
**Perchlorate Primary Maximum Contaminant Level (MCL)**  
**Title 22, California Code of Regulations**

All suppliers of domestic water to the public are subject to regulations adopted by the U.S. Environmental Protection Agency (USEPA) under the Safe Drinking Water Act (42 U.S.C. 300f et seq.) as well as by the California Department of Public Health (Department) under the California Safe Drinking Act (Sections 116270-116751, Health and Safety Code [H&S Code]). California has been granted “primacy” for the enforcement of the Federal Act. In order to receive and maintain primacy, states must promulgate regulations that are no less stringent than the federal regulations.

In accordance with federal regulations, California requires public water systems to sample their sources and have the samples analyzed for inorganic and organic substances in order to determine compliance with drinking water standards, including maximum contaminant levels (MCLs). Primary MCLs are based on health protection, technical feasibility, and costs. The water supplier must notify the Department and the public when a primary MCL has been violated and take appropriate action.

Section 116293(b) of the H&S Code mandates that the Department adopt a perchlorate MCL as close as possible to the public health goal (PHG) established by the Cal/EPA Office of Environmental Health Hazard Assessment (OEHHA), while considering the cost and technical feasibility of treatment and analysis.

This regulation package proposes the following amendments to Chapter 15, Division 4, title 22 of the California Code of Regulations.

- Amend Section 64413.1 (Classification of Water Treatment Facilities) to include points for perchlorate treatment when calculating the classification of a treatment facility and to update the radionuclide section references, which changed as a result of the radionuclide regulations adopted in June 2006.
- Amend Section 64431 (Maximum Contaminant Levels – Inorganic Chemicals) to adopt a perchlorate MCL and clarify the wording in subsection(a);
- Amend Section 64432 (Monitoring and Compliance – Inorganic Chemicals) as follows:
  - (a) and (b) to specify which water systems are required to monitor for perchlorate and cite the sections that provide the detailed requirements;
  - Table 64432-A to adopt perchlorate with its detection limit for purposes of reporting (DLR);
- Adopt a new section 64432.3 (Monitoring and Compliance – Perchlorate) to establish the monitoring and compliance determination requirements for perchlorate and provide variances for systems unable to afford compliance;
- Adopt a new section 64432.8 (Sampling of Treated Water Sources) to require monthly monitoring of the treated water for sources being treated for compliance with any inorganic MCL;

- Amend Section 64447.2 (Best Available Technologies (BAT) – Inorganic Chemicals) to include perchlorate with its best available technology in Table 64447.2-A and list a new technology that is specifically applicable to perchlorate, i.e., biological fluidized bed reactor;
- Repeal Article 17 and Section 64450 (Unregulated Chemicals – Monitoring), to eliminate obsolete requirements (the deadline for monitoring has passed); and
- Amend Section 64465 (Health Effects Language – Inorganic Chemicals) to adopt health effects language for perchlorate.
- Amend Section 64481 (Typical Origins of Contaminants with MCLs) to adopt the typical origins of perchlorate.

The net effects of the proposed regulations would be as follows:

- Community Water Systems (CWS) and Nontransient-Noncommunity Systems (NTNCS) would be required to monitor for, and comply with, an MCL for perchlorate;
- CWS and NTNCS unable to afford treatment to comply with the perchlorate MCL would be able to apply for a variance;
- CWS and NTNCS that treat a drinking water source to comply with an inorganic chemical MCL would be required to monitor the treatment effluent monthly;
- CWS and NTNCS that violate the perchlorate MCL would be required to use specific health effects language for the public notification; and
- Best available technologies would be specified for perchlorate removal.

None of the proposed amendments would affect California's primacy status, because the net effect of these amendments is that the state's regulation would be more stringent than the federal regulation, which is allowed. The USEPA has not yet proposed or adopted an MCL for perchlorate.

The following paragraphs describe and explain the proposed amendments.

## **Article 2. General Requirements**

### **Section 64413.1. Classification of Water Treatment Facilities**

The purpose of amending this section would be to include points for perchlorate treatment when calculating the classification of a treatment facility. Perchlorate, similar to nitrate and nitrite, is considered an acute contaminant and a treatment failure would pose an acute risk to public health. Additionally, the section would be revised to update the radionuclide section references, which changed as a result of the radionuclide regulations adopted in June 2006.

## **Article 4. Primary Standards – Inorganic Chemicals**

### **Section 64431. Maximum Contaminant Levels – Inorganic Chemicals.**

The purpose of this section is to list the chemicals for which maximum contaminant levels (MCLs) have been established to protect the health of consumers of drinking water

served by community and nontransient-noncommunity water systems. The text in subsection (a) would be revised for clarity.

A perchlorate MCL of 0.006 mg/L would be added to Table 64431-A. The rationale for the proposed MCL is provided below; it includes perchlorate characteristics, history, analytical methodology, occurrence in water, health effects, and a cost-benefit analysis summary.

- **About Perchlorate**

Perchlorate (as the chemical ion,  $\text{ClO}_4^-$ ) results from the dissociation of perchlorate-containing salts, such as potassium perchlorate (a chemical used historically in the medical treatment of hyperactive thyroid glands) and ammonium perchlorate (a chemical with many uses, including in rockets, fireworks, and explosives). Perchlorate salts have a long history of use in medicine and industry.

Ammonium perchlorate is used as solid rocket propellant at aerospace development and testing facilities. In California, perchlorate contamination of groundwater has emerged primarily near such facilities. Contamination has also been found in a surface water source, the Colorado River, as the result of contamination from historic ammonium perchlorate manufacturing facilities in the state of Nevada.

- **Recognition of Perchlorate as a Drinking Water Contaminant**

Although used by industry for decades and recognized as an environmental contaminant in the 1980s, it was not until 1997 that perchlorate was identified as a significant drinking water contaminant. This happened when the Department of Health Services drinking water program was informed by the regional water quality control board and operators of an aerospace facility in eastern Sacramento County that drinking water wells near the facility were contaminated. Contamination was presumed to have resulted from cleanup operations at the facility (a federal Superfund site) that pumped shallow groundwater containing volatile organic chemicals (VOC) and perchlorate to a treatment unit that extracted only the VOCs, and injected the perchlorate-containing treated water into a deeper aquifer below the site. The deeper aquifer is a source of drinking water to nearby community systems.

In 1997, analytical methods could not detect perchlorate at levels below 100 micrograms per liter ( $\mu\text{g/L}$ ). However, a review of the available health risk evaluations of perchlorate indicated that concentrations of 4 to 8  $\mu\text{g/L}$  would not adversely affect the thyroid gland (the target organ for the chemical). Since there was a significant gap between the detection level and “safe” levels, the Department’s Sanitation and Radiation Laboratory developed an analytical method that could detect perchlorate at concentrations as low as 4  $\mu\text{g/L}$ . This method evolved into the one currently approved by USEPA for perchlorate analysis: Method 314.0 — Determination of Perchlorate in Drinking Water by Ion Chromatography.

○ **Occurrence**

In 1997, with the more sensitive analytical method, the Department was able to identify dozens of perchlorate-contaminated wells in Sacramento County and in southern California, principally in the counties of Los Angeles, Riverside, and San Bernardino. The contamination of the Colorado River was also identified at this time.

Since 1997, perchlorate has been found in groundwater at various locations throughout the United States, including Massachusetts, New York, Texas, and Nevada. Colorado River contamination has been documented in Nevada and Arizona.

Wells are subject to perchlorate contamination primarily from (1) past practices related to improper handling of perchlorate during the testing of solid rocket propellant, (2) improper hazardous waste disposal, (3) re-injection of water that has had other contaminants (but not perchlorate) removed, and (4) groundwater replenishment with perchlorate-containing water, such as recycled water from the Colorado River.

Surface water contamination seems to be less pervasive than groundwater contamination, but can still be significant in terms of the large number of people exposed (e.g., the Colorado River).

In 1999, the Department adopted a regulation requiring monitoring of perchlorate as an unregulated chemical to address the need to better document the extent of perchlorate contamination of drinking water supplies (22 California Code of Regulations section 64450). Subsequent monitoring indicated significant groundwater and surface water contamination by perchlorate.

As of April 2004, 89 systems reported perchlorate detections in 351 of approximately 6,500 sources sampled. Of the 351 sources, nearly all were groundwater. The few surface water sources were almost all representative of water from the Colorado River.

More than half of the state's community and nontransient-noncommunity systems' drinking water sources have been sampled. The data indicate both a significant level of drinking water contamination and a potential for adverse health effects.

○ **Health Concerns about Perchlorate—State Action Level**

Perchlorate exposure is of public health concern because it interferes with the ability of the thyroid gland to produce hormones. In the very young, hormones are needed for normal prenatal and postnatal growth and development, particularly normal brain development; therefore, a diminution of thyroid hormones is a problem. In the adult, thyroid hormones are needed for normal body metabolism.

In 1997, in response to the findings of perchlorate in drinking water wells in eastern Sacramento County, the Department established an action level (health guidance level) of 18 µg/L. The action level was based on a 4- to 18-µg/L range derived from perchlorate

risk assessments done in 1992 and 1995 by the USEPA for use in its Superfund program that deals with hazardous wastes.. The range was derived from an estimated no-observed-adverse-effect-level (NOAEL) for non-carcinogenic effects on the thyroid gland in human studies, with an uncertainty factor incorporated to provide an adequate margin of safety.

Since 1997, the perchlorate action level has served as non-regulatory guidance to the Department's Drinking Water Program, County Health Departments, utilities and the public on the significance of detections in drinking water, in the absence of federal or state drinking water standards.

In January 2002, reflecting concerns highlighted by a new draft risk assessment by the USEPA's National Center for Environmental Assessment, the Department revised its action level to 4 µg/L, the lower end of the earlier identified 4- to 18-µg/L range. The USEPA draft document suggested a 1µg/L protective level, a value that is lower than the reporting limit of 4 µg/L for perchlorate analytical results.

The 4-µg/L action level was used in an advisory capacity until March 11, 2004, when it was revised to 6 µg/L, the same level as OEHHA's PHG for perchlorate, which was released on that date. Once an MCL is in place, the Department's action level for perchlorate will cease being used to provide guidance.

- **Public Health Goal for Perchlorate: Basis for the Proposed MCL**

PHGs are strictly health-based exposure levels established by OEHHA pursuant to section 116365(c) of the H&S Code, which requires OEHHA to assess the risks to public health posed by a contaminant for which the Department proposes a primary drinking water standard. OEHHA's risk assessment is required to contain "an estimate of the level of the contaminant in drinking water that is not anticipated to cause or contribute to adverse health effects, or that does not pose any significant risk to health. This level shall be known as the public health goal for the contaminant."

In March 2004, OEHHA released a final document, "Public Health Goal for Perchlorate in Drinking Water" in which it established a PHG of 0.006 mg/L, derived from studies on effects of perchlorate on the thyroid gland observed in people. At the PHG, exposures to perchlorate would not affect the human thyroid gland, and would not be anticipated to cause or contribute to adverse health effects or to pose any significant risk to human health.

Pursuant to section 116365(a) and (b) of the H&S Code, the Department is to adopt an MCL that is as close as feasible to the corresponding PHG and "that, to the extent technologically and economically feasible" avoids any significant risk to public health. In addition, the Department must consider any national primary drinking water standard that may exist, and the "technological and economic feasibility of compliance with the proposed primary drinking water standard." The feasibility determination is to address

“the costs of compliance to public water systems, customers, and other affected parties with the proposed primary drinking water standard, including the cost per customer and aggregate cost of compliance, using best available technology.”

To determine whether the primary MCL for perchlorate should be proposed at the PHG level of 0.006 mg/L, the Department first established that there was no existing national primary standard, nor one soon to be developed or promulgated to be used as an additional point of reference.

Next, the Department evaluated feasibility in terms of available analytical methods for detecting perchlorate, monitoring costs, available treatment technologies for removal to the proposed MCL level, and the estimated fiscal impact on California drinking water utilities to comply with the proposed standard.

- **Feasibility of Compliance with the Proposed MCL: Cost-Benefit Analysis**

Section 116293(b) of the H&S Code mandates that the Department adopt a drinking water standard for perchlorate [maximum contaminant level (MCL)]; Section 116365 mandates that the MCL be set as close as possible to the public health goal (PHG), while considering cost and technical feasibility.

H&S Code Section 116365’s reference to considering cost and feasibility requires a review of:

- The availability and costs of analytical methods for determining the presence of perchlorate,
- The availability and costs of appropriate technologies for mitigating its presence,
- The estimated costs to the regulated water systems for contaminant monitoring and,
- The estimated costs for treatment to systems with sources that violate the MCL and must be treated to come into compliance.

Consequently, the Department reviewed analytical method availability, best available technologies (BATs), and conducted a comprehensive cost benefit analysis using the monitoring data in the Division of Drinking Water and Environmental Management Water Quality Monitoring database (WQM). The Department estimated costs and benefits associated with five possible MCLs [0.006, 0.008, 0.010, 0.015, and 0.020 milligrams per liter (mg/L)], using the identified analytical method and the BAT ion exchange (the most commonly used treatment at this time).

Based on the results of the analysis, the Department proposes to adopt an MCL at the PHG level of 0.006 mg/L. The cost-benefit analysis and the Department’s rationale for the proposed MCL are presented below.

- **Monitoring Feasibility**

The Department reviewed monitoring feasibility in terms of methods available, analytical detection levels, and water system costs.

**Analytical method availability** - USEPA Method 314.0—Determination of Perchlorate in Drinking Water by Ion Chromatography—is approved for perchlorate analysis and currently being used to test for perchlorate under existing monitoring requirements. The Department’s Sanitation and Radiation Laboratory has determined that the accuracy and precision at 0.004 mg/L support its use as a minimum detection level for reporting data. This level has been used informally as a “detection level for reporting purposes” (DLR) for perchlorate monitoring for several years and is being proposed as a regulatory DLR in this regulation package.

**Data for cost estimate**

The Department used the perchlorate detections from the Department’s Water Quality Monitoring (WQM) database for the period January 1, 2000 through December 31, 2003. Since January 7, 1999, perchlorate sampling data came from required monitoring of vulnerable sources under unregulated chemical monitoring regulations. Note that in terms of a comprehensive identification of all possibly affected sources in California, the data set cannot be assumed to be complete at the time of the download (March 18, 2004) for the following reasons:

- Under the unregulated chemical monitoring requirements, only water sources identified by the Department as vulnerable were required to monitor; therefore, there are likely to be some sources which were not identified as vulnerable that may be found to be contaminated during the initial monitoring required under the new regulations; and
- In the past, the local primacy agencies were not required to submit hard copies of data to the Department for small systems (<200 service connections). Therefore, this data did not start entering the WQM data base until electronic data transmission (EDT) of the results by the laboratory was required under new reporting regulations that took effect June 14, 2001.

The monitoring results in the downloaded WQM data were reduced to obtain an average level of contamination for each affected active source. The averages were then compared to the evaluated MCLs to estimate the number of sources that would be in violation of each MCL. The number of affected systems was also estimated. The systems (and their sources) were grouped on the basis of size into large (serving 200 or more connections) and small (serving less than 200 connections). The population served by each source was estimated using information obtained from the Department’s Permits, Inspections, Compliance, Monitoring and Enforcement (PICME) database.

**Monitoring costs (initial, routine, and quarterly) for all evaluated MCLs** - The initial, routine, and quarterly monitoring costs would be the same for all reviewed MCLs. The procedure for estimating these monitoring costs follows.

***Monitoring status of sources*** - Between January 1, 2001 and December 31, 2003, under the unregulated chemical monitoring requirements, sources designated “vulnerable” to perchlorate contamination were required to conduct monitoring consisting of two samples in one year. As of January 2004, approximately 55 percent of the drinking water sources in California had been monitored (6,150 “vulnerable” sources), and 45 percent had not been monitored (5,500 “nonvulnerable” sources).

***Proposed monitoring frequencies***

**Initial** - If a drinking water source had not previously been monitored for perchlorate, the water system would have to conduct initial monitoring to determine whether perchlorate is present and whether the source is in compliance with the MCL.

**Routine** - Subsequent to meeting the initial monitoring requirement, sources without detections would be required to monitor once every year (surface water) or once every three (groundwater) years.

**Quarterly for sources with detections** - A water system with one or more drinking water sources with detected perchlorate would be required to monitor those sources quarterly unless/until four consecutive quarters of data findings are “non detects”.

**Initial monitoring costs (first year only)** - As of January 2004, 2,434 large water system sources and 3,066 small water system sources had not been monitored because they were not considered vulnerable under the unregulated chemical monitoring rule. These “nonvulnerable” sources would need to conduct initial monitoring under the proposed regulations consisting of 2 samples during the first year after adoption, at an average cost (based on a laboratory survey) of \$88 a sample. Approximate total costs for this one-time initial monitoring would be \$428,000 for large system sources and \$540,000 for small system sources. These costs would be associated with any adopted MCL.

**Routine monitoring costs (no perchlorate detection)**

**Costs for sources using previously-collected data** - The proposed regulations would allow water systems to make use of previously-collected perchlorate data to minimize costs. Much of that data is the result of monitoring under the State’s unregulated chemical monitoring rule that required “vulnerable” sources to be monitored for perchlorate by December 31, 2003.

Sources able to use previously collected data (~6,150: 2719 large water system sources and 3427 small water system sources) would need to conduct routine monitoring (1 sample/year for surface water sources and 1 sample every 3 years for groundwater sources). Total annualized costs for this ongoing monitoring would be approximately \$93,000 for large water system sources and \$114,000 for small water system sources.

**Costs for sources that had to conduct initial monitoring of “nonvulnerable” sources** - The Department assumes that most of the ~5,500 sources conducting initial monitoring during the first year the proposed regulation takes effect would not detect



perchlorate and, therefore, would subsequently conduct routine monitoring. Consequently, the annualized routine monitoring for these sources would be \$83,000 and \$101,000 for large and small water system sources, respectively.

**Costs for annualized routine monitoring all sources** - Starting with the second year after the regulation is adopted, the total annualized costs for routine monitoring for all sources without perchlorate detections would be approximately \$176,000 and \$216,000, respectively, for large and small water system sources for the 11,650 sources that would then be conducting routine monitoring. These costs would be associated with any adopted MCL.

**Quarterly monitoring costs for sources with detections** - Any active source with a perchlorate detection (level at or above the DLR) would be required to conduct quarterly monitoring until the subsequent data demonstrates that levels are consistently below the DLR. The annual cost of this monitoring for all active sources with detections would be \$62,600 and \$45,700 for large and small system sources, respectively. These costs would be associated with any adopted MCL.

**Summary of estimated source monitoring costs**

The estimated monitoring costs are summarized in Table 1; note that initial, routine and quarterly monitoring costs would be the same for any proposed MCL. Also note that initial monitoring costs of \$968,000 occur only during year 1; the estimate of ongoing annualized monitoring costs of \$500,300 is presented for year 2, and would be expected to be approximately the same for subsequent years.

**Table 1  
Summary of Estimated Source Monitoring Costs – Any MCL**

<i>System size</i>	<i>Initial monitoring (yr 1 only) (\$)</i>	<i>Routine monitoring, annualized (year 2 and into the future) (\$)</i>	<i>Quarterly monitoring for all sources with detections (yr 2) (\$)</i>	<i>Total annualized ongoing monitoring (year 2 and into the future) (\$)</i>
large	428,000	176,000	62,600	238,600
small	540,000	216,000	45,700	261,700
<b>Totals</b>	<b>968,000</b>	<b>392,000</b>	<b>108,300</b>	<b>500,300</b>

**Monitoring costs for treated water sources exceeding the MCL**

Estimated monitoring costs for treated water sources are provided in Table 2; these costs would differ with each evaluated MCL, since the number of affected sources would vary. The total treated water monitoring costs of \$134,300 for the proposed MCL of 0.006 mg/L would increase the monitoring costs by about 27% over the \$500,300 annualized monitoring costs associated with any of the evaluated MCLs. That percentage would drop at the other evaluated MCL levels, but the Department does not consider the magnitude of the incremental savings to be significant enough to justify proposing an MCL other than at the PHG level of 0.006 mg/L.

**Table 2**  
**Estimated Annual Treated Water Monitoring Costs**

<i>Source type/MCL</i>	<i># Large system sources</i>	<i># Small system sources</i>	<i>Large water system costs (\$1000)</i>	<i>Small water system costs (\$1000)</i>	<i>Total Treated Water Monitoring Costs (\$1000)</i>
<i>For sources with treatment installed under the proposed regulations:</i>					
<b>Groundwater</b>					
0.006 mg/L MCL	84	10	88.7	10.6	99.3
0.008 "	54	7	57.0	7.4	64.4
0.010 "	31	4	32.7	4.2	36.9
0.015 "	8	0	8.4	---	8.4
0.020 "	3	0	3.2	---	3.2
<b>surface water</b>					
0.006 mg/L MCL	1	2	1.1	2.2	3.3
0.008 "	0	2	0	2.2	2.2
<i>For sources with existing perchlorate treatment</i>					
<b>Groundwater</b>					
0.006 mg/L MCL	30	0	31.7	---	31.7
0.008 "	25		26.4		26.4
0.010 "	19		20.1		20.1
0.015 "	8		8.4		8.4
0.020 "	5		5.3		5.3
<b>surface water</b>					
All five MCLs	0	0	---	---	----

**Rate of perchlorate detections** - As noted, the set of monitored sources to date consists mainly of those designated vulnerable to perchlorate contamination. The Department evaluated whether to use the current “rate of detections” to project to the future monitoring of nonvulnerable sources in order to develop possible costs.

The highest rate of detections is from 0.004 (the DLR) to the proposed MCL of 0.006 mg/L: ~ 3.4%. The percentage of systems found to be greater than 0.006 mg/L among the “vulnerable” sources is ~ 3.4% for groundwater and 0.5% for surface water sources in large water systems, with 0.3% for groundwater and 0.9% for surface water sources in small water systems.

In order to project from the known rates of detection and violation of any of the evaluated MCLs for “vulnerable” sources to possible rates in “nonvulnerable” sources that have not been monitored, the Department believes that a safe assumption would be that the rates of detections and MCL violations would be less than half the rates found to date. However, the Department decided not to attempt to project costs based on this assumption, given the high level of associated uncertainty. Any additional monitoring costs due to perchlorate detected in the nonvulnerable sources during the initial monitoring would be relatively insignificant; treatment costs would be more significant, but difficult to estimate given the lack of data.

- **Treatment Feasibility**

***Treatment technology availability*** - The Department has determined that two treatment technologies meet the best available technology (BAT) criteria provided in Section 116370 of the H&S Code: Biological fluidized bed reactor and ion exchange (see discussion below under Section 64447.2). The Department used ion exchange treatment with disposable resin as the basis for its estimate of costs associated with treating sources in violation of the MCL, because it is currently the treatment being selected to address most drinking water contamination problems.

***Treatment and Operations and Maintenance (O&M) Costs***

The capital and O&M costs for treatment were based on an average of available costs from two treatment providers. The tables below present summaries of capital costs, annualized capital costs, and annual O&M costs (associated with the evaluated perchlorate MCLs for large and small public water systems. The following assumptions were used in the cost analysis:

1. Water quality data from the Department's compliance monitoring database provides a sufficient basis for a fiscal impact analysis for the proposed regulations.
2. Average day demand = 150 gallons/person/day; peaking factor for maximum day demand = 1.5.
3. Each source with existing treatment (i.e., treatment provided specifically for perchlorate; treatment/blending provided for nitrate that also remediates perchlorate) will continue to be treated. Therefore there are no additional capital or operation and maintenance (O&M) costs to come into compliance with the MCL.
4. Each source without treatment will install ion exchange with disposable resin to comply with the proposed perchlorate MCL.

***Total capital costs*** To estimate capital costs and O&M costs, the Department used an approach similar to that used by the USEPA for ion exchange treatment of arsenic (see Table 3.1, Section 3.8, and Appendix E from Technologies and Costs for Removal of Arsenic from Drinking Water, December 2000, EPA 815-R-00-028, [www.epa.gov](http://www.epa.gov)). The perchlorate approach differs in that the preliminary capital cost does not include the cost of the resin, whereas for the arsenic cost evaluation, the resin was included as a capital cost. For arsenic, the O&M approach identified three major components: Resin regeneration frequency, regeneration dose, and incremental labor. The perchlorate approach differs in that the regeneration frequency/dose has been replaced with resin replacement/disposal and the incremental labor used represents an average of small and large water system rates.

**Table 3**  
**Estimated Total Capital Cost Summary for Evaluated MCLs**

<i>MCL (mg/L)</i>	<i>No. Affected Sources by System Size</i>		<i>Capital Costs by System Size (\$1000)</i>	
	<i>Large</i>	<i>Small</i>	<i>Large</i>	<i>Small</i>
<b>Groundwater</b>				
0.006	84	10	70,159	396
0.008	54	7	42,853	302
0.010	31	4	25,058	208
0.015	8	0	4,683	---
0.020	3	0	2,019	---
<b>surface water</b>				
0.006	1	2	708	62
0.008	0	2	---	62
0.010	0	0	---	---
0.015	0	0	---	---
0.020	0	0	---	---

**Annualized treatment costs:** The estimated total annualized treatment, and operation and maintenance (O&M) costs from the cost-benefit analysis for the considered MCLs are shown in Table 3. As indicated, the Department estimates that 85 large water system sources (32 systems) and 12 small water system sources (11 systems) would need to be treated for compliance with the proposed MCL. Some of these sources might be able to meet the MCL by blending their drinking water supplies as already occurs during drinking water distribution, at minimal cost. However, if these sources were to be treated using ion exchange, the annualized capital and operations and maintenance costs would total approximately \$23,700,000 for large water system sources and \$250,000 for small water system sources (Table 4). Average per system costs would be \$719,700 for large systems and \$23,500 for small (Table 6) for the proposed MCL of 0.006 mg/L; average per system costs are essentially the same for all the MCLs evaluated.

**Table 4**  
**Estimated Total Annualized Treatment Costs (Active Sources) for Evaluated MCLs**

<i>MCL (mg/L)</i>	<i>Number of Affected Sources by System Size</i>		<i>Total Annualized Capital Costs by System Size (\$1000)</i>		<i>Total Annual O&amp;M Costs by System Size (\$1000)</i>		<i>Total Annual Treatment Costs for all Affected Systems (\$1000)</i>	
	<i>Large</i>	<i>Small</i>	<i>Large</i>	<i>Small</i>	<i>Large</i>	<i>Small</i>	<i>Large</i>	<i>Small</i>
<b>Groundwater</b>								
0.006	84	10	6,600	40	16,900	170	23,500	210
0.008	54	7	4,000	30	10,400	120	14,400	150
0.010	31	4	2,400	20	6,200	70	8,600	90
0.015	8	0	400	----	1,000	----	1,400	----
0.020	3	0	200	----	400	----	600	----
<b>surface water</b>								
0.006	1	2	70	6	120	30	190	36
0.008	0	2	---	6	----	30	----	36
0.010	0	0	---	----	----	----	----	----
0.015	0	0	---	----	----	----	----	----
0.020	0	0	---	----	----	----	----	----

Table 5 summarizes both the estimated annualized treatment and treated effluent monitoring costs by system size and the population avoiding exposure for the evaluated MCLs. Note that although there are minimal cost impacts at MCL levels higher than 0.010 mg/L, very little public health benefit would be achieved, i.e., an MCL above 0.010 mg/L would result in close to half a million people being exposed to perchlorate levels that have the potential to adversely affect their health.

**Table 5**  
**Estimated Total Annualized Treatment and Monitoring Costs and Reduction in Population Exposed for Evaluated MCLs**

<i>MCL (mg/L)</i>	<i>Number of Affected Systems (sources)</i>		<i>Total Annual Treatment &amp; Treated Effluent Monitoring Costs for all Affected Systems (\$)</i>		<i>Estimated Reduction in Population Exposed</i>	
	<i>Large</i>	<i>Small</i>	<i>Large</i>	<i>Small</i>	<i>Large</i>	<i>Small</i>
0.006	34 (85)	11 (12)	23,690,000	246,000	517,900	1,700
0.008	24 (54)	8 (9)	14,400,000	186,000	314,200	1,300
0.010	16 (31)	4 (4)	8,600,000	90,000	187,400	960
0.015	7 (8)	0	1,400,000	----	30,000	---
0.020	3 (3)	0	600,000	----	12,900	---

Table 5 shows that at an MCL of 0.010 mg/L, 16 large water systems would be impacted at an annual cost of \$8.6 million with a reduction of 187,000 in the population exposed to potential adverse health effects, while at an MCL of 0.006 mg/L, 34 large water systems would be impacted at an annual cost of \$23.69 million with a reduction of 517,900 exposed. The magnitude difference in total costs between the higher MCL of 0.010 mg/L and the MCL set at the PHG level of 0.006 mg/L is the same as that of the population avoiding exposure (~2.75), while the cost per source treated stays approximately the same. The Department believes that reducing exposure for as large a population as possible to the PHG level is an important public health measure.

To further evaluate feasibility, the Department estimated the average annual per service connection cost for systems that would exceed the proposed MCL to assess the impact on individual households. The large systems have about 1,349,000 service connections, for an average annual cost of approximately \$18 per connection for treatment and monitoring for an MCL of 0.006 mg/L. However, for some of the affected small community water systems, annual costs per service connection could range from \$300 to \$1,580, with an average of \$590.

Since the PHG of 0.006 mg/L establishes the level of no significant health risk and an MCL at this level would eliminate the potential for adverse health effects for more than half a million people at an average annual cost of only \$18 per customer for affected large water systems, the Department believes that it has no alternative but to propose the MCL at this level. However, the cost per service connection for small water systems at that level ranges from \$300 to \$1,580 per service connection per year, with an average of \$540, while the total estimated population that would avoid exposure is only about 1700. The median household incomes in the areas served by these water systems range from ~\$16,300 to ~\$49,300. This cost versus benefit for these small systems is considerably less favorable than that for larger systems, given the small number of persons both potentially affected by exposure and having to bear the treatment costs. To address this difference, the Department is proposing to provide for variances for small water systems based on affordability criteria; the proposal is detailed under in the discussion below for Section 64432.3 and data provided in Table 8.

Given no national standard as a reference point, the OEHHA PHG of 0.006 mg/L, the feasibility of monitoring and treatment costs for large water systems, and the provision for variances for those small water systems for which the treatment costs would not be affordable, the Department proposes that the MCL for perchlorate be set at the level of the PHG, 0.006 mg/L.

Table 6 summarizes the total costs and benefits associated with the proposed MCL level of 0.006 mg/L. Ongoing monitoring costs for sources not in violation of the proposed MCL are included, although these costs would be associated with any of the MCLs evaluated.

**Table 6  
Summary of Estimated Total Annual Costs and Benefits for Proposed MCL  
by System Size**

System size	Ongoing monitoring for sources ND and < MCL				Sources in Violation			Total Annual Costs for Systems > MCL	Average Cost per System with Treated Sources	Total Population Avoiding Exposure
	Annualized Routine		Quarterly for detections ≤ MCL		Total Annualized Treatment & O&M costs		Source and Trtd Wtr Monitoring			
	# sources.	\$1000	# sources	\$1000	# sources	\$1000	\$1000			
<b>Small</b>	6493	216	118	41.5	12	250	16.9	267	23.5	1,700
<b>Large</b>	5153	176	93	32.7	85	23,800	119.9	23,920	698.5	514,300
<b>Totals</b>	11,646	392	211	74.2	97	24,050	136.8	24,187	-----	515,100

**Section 64413.1. Classification of Water Treatment Facilities**

(b)(4) Amending this section would include points for perchlorate treatment when calculating the classification of a treatment facility. Perchlorate, similar to nitrate and nitrite, is considered an acute contaminant and a treatment failure would pose an acute risk to public health.

(b)(4), (5), (7), and (13) Each of these sections reference Table 4, section 64443, of article 5 (Radioactivity). As a result of the adoption of revised radioactivity regulations in June 2006, table 4 of section 64443 no longer exists. These sections have therefore been amended to reference the correct tables, as reflected in the existing regulations.

**Section 64432. Monitoring and Compliance – Inorganic Chemicals**

The purpose of this section is to establish the monitoring and compliance requirements for inorganic chemicals in drinking water, and to define the levels of detection for reporting purposes (DLRs) for all chemicals with MCLs.

(a) This subsection establishes the applicability of the monitoring requirements for the different inorganic chemicals (IOCs); some of the IOCs, such as nitrate and perchlorate, require different monitoring and compliance approaches, which are laid out in separate sections. Amendments would be made to this subsection to add perchlorate with its section reference. Further, the existing references would be simplified for clarity.

(b) This subsection establishes the basic monitoring requirements for the IOCs; asbestos and nitrate/nitrite are exceptions and perchlorate would be added to the list, since a separate section is being proposed to address its monitoring.

(c) The purpose of this subsection is to establish standardized reporting levels for the IOCs. The Department proposes to add perchlorate with its DLR of 0.004 mg/L to Table 64432-A, along with a reference to the section being proposed for perchlorate monitoring and compliance. DLRs should be achievable within acceptable limits of precision and accuracy by at least 75% of the commercial laboratories in the state. All inorganic chemicals with MCLs have regulatory DLRs. The proposed perchlorate DLR of 0.004 mg/L is based on the Department's experience with monitoring for perchlorate as an "unregulated chemical" and input from the Department's Sanitation and Radiation Laboratory and commercial laboratories. This is the same reporting limit that has been used since 1997 for voluntary occurrence monitoring, and since 1999, for the "unregulated chemical." monitoring.

(f) The purpose of this subsection is to establish compliance determination procedures; IOCs addressed separately are specified as exceptions; perchlorate would be added to this list.

(m) The purpose of this subsection is to specify IOC-related requirements for transient water systems. It would be amended for clarity.

### **Section 64432.3. Monitoring and Compliance – Perchlorate.**

The purpose of this proposed section is to establish the monitoring and MCL compliance determination requirements for perchlorate. Since perchlorate can affect the thyroid and development of an infant or fetus within a relatively short period of time, it is considered to be a chemical that poses an "acute" risk. For that reason, it would not be appropriate to address it with the responses provided for the "chronic" risk chemicals such as mercury and arsenic.

(a) This subsection would establish the "initial" monitoring requirements for perchlorate. When a new MCL is adopted, initial monitoring is always required to identify any contaminated sources for which more frequent monitoring or treatment might be needed.

In its unregulated chemical monitoring rule, to obtain a representative picture of the presence/absence of perchlorate in a source, U.S.EPA required two samples collected five to seven months apart with one collected during a "vulnerable" to contamination period. Subsequently, the Department adopted this approach for California's unregulated chemical monitoring regulations. The perchlorate monitoring of vulnerable sources required under the unregulated chemical monitoring rule was completed by December 31, 2003, as noted earlier.

The same approach is proposed for initial monitoring in these regulations for two reasons: Monitoring twice during one year with one sample collected during a "vulnerable" time period (summer) when perchlorate is more likely to show up because there would be no dilution from rainfall, would provide a reasonable evaluation of



whether perchlorate was present in the source; and those systems that have already monitored could use their previously-collected data to satisfy the new regulations.

**(b)** This subsection allows previously collected samples to be used to meet the initial monitoring requirements. Since the purpose of initial monitoring is to ensure that all sources have been evaluated, if a source has already been monitored, that objective has been met.

**(c)** This subsection establishes the ongoing routine monitoring requirements for water sources without detected perchlorate that have met the initial monitoring requirements. It is consistent with the routine monitoring for all other IOCs, except asbestos, nitrate and nitrite. The Department has found this frequency to be adequate for most IOC monitoring and believes that it is appropriate to use the same approach for perchlorate, given the sources of perchlorate contamination.

**(d)** The purpose of this subsection is to provide the compliance determination for any source with a sample result exceeding the perchlorate MCL. It is constructed similarly to the determination for nitrate and nitrite, the primary difference being a longer timeframe for reporting and followup sample collection. Since perchlorate poses a relatively acute risk of adverse effects, it is important to move quickly to determine compliance and subsequent actions. However, the risk is not as immediate as that for nitrate and nitrite, so the timeframe is slightly longer, minimizing the hardship of water systems to ensure that the requisite actions are taken on a timely basis. Based on its review of the PHG document cited earlier, the Department believes that the 48-hour time frame would ensure adequate public health protection, while acknowledging that the risk associated with perchlorate is not as acute as that with nitrate and nitrite.

As with nitrate and nitrite, water systems are required to ensure that someone is available at all times to receive notice of results that exceed the MCL, that the laboratory will notify the Department if for some reason the water system cannot be reached, that followup sampling is conducted on a timely basis and, if for some reason it is not, that the public is notified so that it can take precautions. All these measures are to ensure that public health is protected.

**(e)** The purpose of this subsection is to require more frequent monitoring of any source with a detection to collect more information on the contamination in that source and determine any data trends. The quarterly monitoring is particularly necessary because the DLR of 0.004 mg/L (reporting level) and the MCL of 0.006 mg/L are very close together, and frequent monitoring can provide information to the water system and the Department about whether the perchlorate level is moving towards the MCL. Based on the Department's experience, quarterly monitoring would provide sufficient data to evaluate the source and ensure that the public is not being exposed to perchlorate levels exceeding the MCL.

This subsection also would allow reduced monitoring for sources triggered by a perchlorate detection into quarterly monitoring that subsequently have results below the DLR on a consistent basis. Such sources would be unlikely to exceed the MCL and would not really need to monitor quarterly. They would still be subject to the routine monitoring frequencies (once every three years for groundwater and annually for surface water).

(f) The purpose of this subsection is to enable a water system that cannot afford to install treatment to obtain a variance by demonstrating that it meets the affordability criteria developed by the National Drinking Water Advisory Council (NDWAC) (Recommendations of NDWAC to U.S. EPA on Its National Small Systems Affordability Criteria, July 2003).

The NDWAC criteria were developed to address the provision in the cited provisions of the federal Safe Drinking Water Act (SDWA) Sec. 300g-4. (e)(3)(A) specifying that a variance can only be available to a system "...that cannot afford to comply, in accordance with affordability criterion established by the Administrator (or the State in the case of a State that has primary enforcement responsibility under section 300g-2 of this title)...". California has not developed its own affordability criteria, but was active in the NDWAC that drafted the Recommendations cited above and believes that they provide an excellent basis for evaluating a water system's ability to pay for treatment.

Based on the recommended NDWAC approach, the proposed regulations would establish that a water system must be able to demonstrate that the estimated annualized cost per household (i.e., service connection) for treatment to comply with the perchlorate MCL exceeds 1% of the median household income in the community within which the customers served by the water system reside to apply for a variance. The Department would thoroughly review the documentation provided and ensure that the water system did indeed meet the criteria and had exhausted any possible alternatives, such as connecting up to another water system, consolidation with one or more systems, and obtaining grant monies to pay for treatment.

Median household income data is available for census tracts and is currently used in making other kinds of determinations related to funding and affordability. Based on census data, the average population associated with a household (service connection) is 2.9 persons. The Department developed the following table listing five small water systems that could be impacted by the proposed MCL and would meet the NDWAC affordability criteria:

**Table 8  
Compilation of Costs vs Median Household Income  
for Compliance with Proposed Perchlorate MCL of 0.006 mg/L**

<i>System</i>	<i>County</i>	<i>Total Annual Costs for Treatment Installation, Operation, Maintenance &amp; Monitoring (\$)</i>	<i>Number of Service Connections</i>	<i>Annual Cost per Service Connection (\$)</i>	<i>1% of MHI for Census Tract (\$)</i>
A	Kern	20,598	32	644	430
B	San Benito	20,598	13	1,584	493
C	Kern	20,598	68	303	163
D	Orange	20,598	35	589	441
E	Tulare	20,598	43	479	321

**Section 64432.8. Sampling of Treated Water Sources.**

This purpose of this proposed section would to ensure that the water treated to remove a contaminant prior to its distribution to the public consistently meets the MCL.

(a) Although this requirement for monthly treated water monitoring would be new in the regulations for IOCs, such monitoring is already required in the regulations for organic chemical treatment (Section 64445.2). Further, the Department’s field offices regularly incorporate treated water monitoring into water system permit amendments for treated waters to ensure public health protection and consistent MCL compliance. Monthly monitoring enables the Department to monitor the adequacy of the contaminant treatment process. Frequent monitoring of the treated water assures that any possible problems with the treatment process will be brought to the Department in a timely manner.

(b) This subsection would allow the Department to require more frequent monitoring if a treatment process necessitated more frequent surveillance to ensure consistent MCL compliance. This might be necessary in situations such as co-contamination, anomalous data, media reaching exhaustion on an inconsistent timeframe, or extreme fluctuations of treatment influent concentrations.

**Article 12. Best Available Technologies (BAT)**

**Section 64447.2. Best available technologies – inorganic chemicals**

The purpose of this section is to identify the best available technologies (BATs) for reducing the level of inorganic chemicals in drinking water in order to comply with the MCLs, pursuant to section 116370 of the H&S Code.

Section 116370 of the H&S Code states that the Department’s finding of BAT “shall take into consideration the costs and benefits of best available treatment technology that has been proven effective under full-scale field applications.”

To determine BAT, the Department:

- Identified potential treatment technologies by consulting with technical staff and district offices working with water systems with installed perchlorate treatment,

- Reviewed USEPA and AWWA websites and the Journal AWWA (1995 – 2003), and
- Performed a literature search through the Internet that included the following websites:

Website Name	Website Link
United States Environmental Protection Agency	<a href="http://www.epa.gov">www.epa.gov</a>
USEPA – Technology Innovation Program, Hazardous Waste Clean-Up Information	<a href="http://www.clu-in.org/perchlorate">www.clu-in.org/perchlorate</a>
American Water Works Association Research Foundation	<a href="http://www.awwarf.com">www.awwarf.com</a>
Groundwater Remediation Technologies Analysis Center	<a href="http://www.gwrtac.org">www.gwrtac.org</a>
Defense Environmental Network & Information Exchange	<a href="http://www.denix.osd.mil/denix/denix.html">www.denix.osd.mil/denix/denix.html</a>
Federal Remediation Technologies Roundtable	<a href="http://www.frtr.gov">www.frtr.gov</a>
American Society of Civil Engineers	<a href="http://www.asce.org">www.asce.org</a>
Ixquick (meta search engine)	<a href="http://www.ixquick.com">www.ixquick.com</a>

Based on the Department’s review, the following technologies were determined to be cost-effective based on full-scale field applications and capable of reducing perchlorate to < 0.004 mg/L (the DLR).

- Biological fluidized bed reactor
- Ion exchange

The following matrix summarizes the information relevant to the determination of BAT for drinking water treatment that was available as of August, 2004; it includes the name of the technology, scale on which technology has been evaluated, whether its effectiveness has been demonstrated in a full-scale application (as required under the H&S Code), whether actual cost data are available, and any comments.

### Perchlorate BAT Determination Matrix

Technology	Project Scale	Effective Under Full-Scale Field Applications ?	Actual Costs Based on Full-Scale Field Applications <sup>1</sup>	Comments
Biological Fluidized Bed Reactor (BFBR)	Lab, Pilot, Full	Yes	Reference	Microbiological seed source must be identified and characterized as free of human pathogens. Post-reactor treatment needed to comply with the SWTR.
Biological Treatment	Lab, Pilot, Prototype	No	Not available	

Other Than BFBR <sup>2</sup>				
Chemical Reduction	Lab	No	Not available	
Enhanced Coagulation	Full	No	Not available	
Granular Activated Carbon <sup>3</sup> (GAC)	Lab, Pilot, Full	Yes	Not available	Limited data (~1 month) from full-scale plant using conventional GAC showed technology was effective for removing perchlorate, but not for very long. Based on data to date, GAC does not appear to be cost-effective. Demonstration study at full-scale plant using tailored GAC is underway for the next 4 – 9 months. Study objective is to obtain Department acceptance and develop cost data. Currently pursuing ANSI/NSF Standard 61 certification for tailored GAC.
Ion Exchange	Lab, Pilot, Full	Yes	Capital cost – lower O&M cost – higher	Resin requires disposal or regeneration with brine disposal/destruction.
Membrane Processes	Lab	No	Not available	

*Footnotes:*

- <sup>1</sup>. Cost estimates are relative, using biological fluidized bed reactor as the reference.
- <sup>2</sup>. Alone or in combination with membrane processes.
- <sup>3</sup>. Alone or in combination with advanced oxidation processes.

Treatment costs will vary significantly depending upon many site-specific parameters including the level of perchlorate in the source, the physical qualities of the water and any other regulated chemicals present, the availability of land, the cost of construction labor and water treatment plant operating staff, etc.

**Article 17. Special Monitoring Requirement for Unregulated Chemicals.**  
**Section 64450. Unregulated Chemicals.**

The purpose of this section is to list those chemicals for which monitoring must be conducted to determine their occurrence in drinking water supplies. The proposed regulation would repeal this section because the deadline for monitoring has passed. At this time, there are no additional chemicals for which the Department needs to collect occurrence data.

**Article 18. Notification of Water Consumers and the Department.**  
**Section 64465. Public Notice Content and Format.**

The purpose of this section is to provide language to be communicated to the public when an MCL for a contaminant has been violated; the language is intended to inform the public about the possible health effects associated with the contaminant. The proposed regulation would amend this section by adding (in alphabetical order, in the table in Appendix 64465-D) the public notification language for a perchlorate MCL violation. The language is proposed for conformance with the language for other chemicals with

primary MCLs to be included in the notice sent to the public if the water system violates the MCL. The U.S. EPA initiated this specific language requirement in regulations for primary MCLs in 1991; as mandated, the Department has adopted language for all federal MCLs and, for consistency, has adopted language for state-mandated MCLs as well.

**Section 64481. Content of the Consumer Confidence Report.**

The purpose of this section is to provide language to be communicated to the public in consumer confidence reports (CCRs) when a contaminant has been detected; the language is intended to inform the public of the typical origins, or source, of the contaminant. The proposed regulation would amend this section by adding (in alphabetical order, in the table in Appendix 64481-A) the major sources of the contaminant in drinking water. The language is proposed for conformance with the language for other chemicals with primary MCLs to be included in CCRs sent by water systems to their consumers. The U.S. EPA initiated this specific language requirement in regulations for primary MCLs in 1998; as mandated, the Department has adopted language for all federal MCLs and, for consistency, has adopted language for state-mandated MCLs as well.

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Note that the Department finds that adoption of the subject regulations constitutes action by a regulatory agency, which action is expressly authorized by state statute for protection of the environment and does not involve the relaxation of any standard for protection of the environment; and is therefore categorically exempt from compliance with the California Environmental Quality Act (CEQA) as a Class 8 exemption pursuant to CEQA Guidelines, 14 CCR 15308. The Department further finds that the adoption of the subject regulations does not fall within any exception to categorically exempt projects described in Public Resources Code 21084.

**APPENDIX A: References**

**For PHG:**

OEHHA, 2004, Public Health Goal for Perchlorate in Drinking Water, March, Office of Environmental Health Hazard Assessment, California Environmental Protection Agency.

**For BAT:**

<i>Reference</i>	<i>Internet Links and Comments (as of 8/4/04)</i>
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California Department of Health Services. Letter from Richard H. Sakaji, DHS to Donald E. Vanderkar, Aerojet, Condition Acceptance of Biological Treatment (Fluidized Bed Reactors) for the Removal of Perchlorate During Drinking Water Production, April 2, 2002.	Hardcopy only.
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Catts, J. G. Biological Treatment of Perchlorate at Low Concentrations in Water, Baldwin Park Operable Unit, San Gabriel Basin. Presentation from Speaker's Note from the Henderson, NV Perchlorate Stakeholders Forum, May 19 - 21, 1998. <a href="http://www.epa.gov/safewater/ccl/perchlorate/tab2.html">www.epa.gov/safewater/ccl/perchlorate/tab2.html</a> (accessed 12/10/02).	<a href="http://www.epa.gov/safewater/ccl/perchlorate/tab2.html">www.epa.gov/safewater/ccl/perchlorate/tab2.html</a>

<i>Reference</i>	<i>Internet Links and Comments (as of 8/4/04)</i>
Catts, J.; McCullough, M. L. Final Phase 1 Treatability Study Report, Perchlorate in Groundwater, Baldwin Park Operable Unit, San Gabriel Basin, Harding Lawson Associates, April 1999. <a href="http://www.clu-in.org/perchlorate">http://www.clu-in.org/perchlorate</a> (accessed 4/17/03).	<a href="http://www.clu-in.org/perchlorate">www.clu-in.org/perchlorate</a>
Coppola, E., Applied Research Associates, Inc., personal communication, 2003.	
Envirogen. Groundwater Study Program Initiates Pilot Test for Possible Perchlorate Treatment, Envirogen Press Release, May 22, 2002. <a href="http://www.envirogen.com/pr052202.htm">www.envirogen.com/pr052202.htm</a> (accessed 12/11/02).	<a href="http://www.envirogen.com/pr052202.htm">www.envirogen.com/pr052202.htm</a>
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<i>Reference</i>	<i>Internet Links and Comments (as of 8/4/04)</i>
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## **Supplement - Revisions Following Public Comment**

Pursuant to California Public Health Act of 2006 (Act; S. B. 162, Section 1, Chap. 241, Stats. 2006), effective July 1, 2007, the California Department of Public Health has authority to adopt the subject regulations. Therefore, multiple references to "California Department of Health Services" have been deleted and replaced with "California Department of Public Health" and statutory authority and references for each proposed new, amended, or repealed regulation have been appropriately modified.

As a result of an internal review, the California Department of Public Health (Department) proposes to amend the following:

Proposed Appendix 64481-A, "Typical Origins of Contaminants with Primary MCLs". For perchlorate, the language for the typical origins of contaminants with an MCL stated, "Perchlorate is an inorganic chemical used in solid rocket repellent, fireworks, explosives..." The term "repellent" should have been presented as "propellant." The Department has corrected this typographical error accordingly.

**Addendum 1**  
**Response to Comments; Period Ending November 3, 2006**

The Department solicited written comments on proposed regulation package R-16-04. Comments were received in the following manner: 1) phone calls directly to the Department, 2) written correspondence, either by electronic mail (email or facsimile) or traditional mail, 3) orally presented comments during the public hearing held in Sacramento on October 30, 2006.

Table 1 presents a record of those having phoned the Department regarding the proposed regulation. One individual urged implementation of a lower MCL, while the remaining individuals urged implementation of the proposed perchlorate standard. It should also be noted that 28 other individuals also urged implementation of the proposed standard, but chose not to provide their name.

Table 2 presents a record of commentators having submitted comments by written correspondence or orally during the public hearing.

**Table 1: Telephone Commentators Urging Implementation of the Proposed Perchlorate Standard**

<i>Commentator</i>	<i>Representation</i>	<i>Location (if provided)</i>
Kevin Barrows	Citizen	San Francisco, CA
Amanda Bloom	Citizen	Oakland, CA
Thembi Borrás	Citizen	Not provided
Jill Bottomley	Citizen	Not provided
Teri Csellak	Citizen	Newbury Park, CA
Laura Collins	Citizen	San Rafael, CA
Barbara Comnes	Citizen	Not provided
Dana Davis	Citizen	Petaluma, CA
Dr. Geraldine Dimondstein	Citizen	Not provided
Iris Edinger	Citizen	Woodland Hills, CA
Professor John Felstiner	Citizen	Stanford University
Anne Graham	Citizen	Marin County, CA
Karen Greene	Citizen	Los Angeles, CA
George Grujich	Citizen	Not provided
Dorothea Harrington	Citizen	Pasadena, CA
Ann Holland	Citizen	Southern California
Lee Hudson and family	Citizen	Nevada City, CA
Joan Intrator	Citizen	San Francisco, CA
Roberta Kemp	Citizen	Northern California
Margie Lazor	Citizen	Not provided
Eleanor Lyman	Citizen	San Francisco Bay area

<i>Commentator</i>	<i>Representation</i>	<i>Location (if provided)</i>
Marsha Lyon	Citizen	Long Beach, CA
Karen Malley	Citizen	Anaheim, CA
Mark Mandel	Citizen	San Diego, CA
Robert Markovic	Citizen	Los Angeles, CA
Jenny Marshall	Citizen	Oakland, CA
Barbara Meislin	Citizen	Not provided
Linda Murray	Citizen	Paso Robles, CA
Dr. Naiman	Citizen	Woodland Hills, CA
Annette Pirrone	Citizen	Marin County, CA
Laurel Powers	Citizen	Petaluma, CA
Dorri Raskin (would like to have a 1 ppb standard)	Citizen	Not provided
Toby Rhodes	Citizen	Los Angeles, CA
Gary Roberts	Citizen	Palmdale, CA
Josephine Roth	Citizen	Not provided
Harold Samuels	Citizen	Southern California
Lisa Simpson	Citizen	Not provided
Edward Steblay	Citizen	Belmont, CA
Judi Williams	Citizen	Northern California
Leo Wolf	Citizen	Southern California

**Table 2: Commentators Providing Written Comments and/or Comments at the Public Hearing**

<i>Number</i>	<i>Commentator(s)</i>	<i>Representation</i>
1	Allen, Detrich	City of Los Angeles, Environmental Affairs Department
2	Birabent, Antonio Carlos	Action and Environmental Justice
3	Borak, Jonathon	Yale School of Medicine
4	Bordonaro, Charles	Not provided
5	Bordonaro, Mary	Not provided
6	Brady, Terree	Not provided
7	Brecker, Sue	Not provided
8	Bunch, Brad	McCollum & Bunch, Law Offices
9	Camoroda, Stephanie	Latino Issues Forum
10	Charnley, Gail – PhD	Health Risk Strategies
11	Clark, Krista	Association of California Water Agencies
12	Davis, Debbie	Environmental Justice Coalition for Water
13	Deischer, Marene	Center for Community Action and Environmental Justice
14	Diaz, Davin	Center for Community Action and Environmental Justice
15	Dongell, Rchard	Dongell, Lawrence, Finney, Claypool LLP
16	Dudas, Joseph	Not provided
17	Dudas, Linda	Not provided
18	Galat, Shirley	Not provided
19	Girard, Michael F.	Perchlorate Study Group & Aerojet
20	Gonzalez, Wilfred and Johnson, Mark	Coachella Valley Water District
21	Grant, Barbara	Not provided
22	Greenfield, Judy	Not provided
23	Hamilton, Sylvia	Perchlorate Community Advisory Group
24	Hawley, Richard	Not provided
25	Hirsh, E.	Not provided
26	Holman, Andrew	Clean Water Action
27	Holman, Christina	Not provided
28	Hoshang, Karwa	Not provided
29	Hubbard, Mary	Not provided
30	Huff, Holly	Not provided
31	Jacob, Dr. Anila	Environmental Working Group
32	Jahagirdar, Sujatha; Sharp,	Environment California

<i>Number</i>	<i>Commentator(s)</i>	<i>Representation</i>
	Renee; Ventura, Andria; Siegel, Lenny	
33	Johnson, Mark L.	Coachella Valley Water District
34	Jourdan, Rochelle	Not provided
35	Klea, Bonnie	Not provided
36	Kleissas, Nick	Not provided
37	Koraaaiski, Dawn	Not provided
38	Laird, John	Assembly, California Legislature
39	Lamm, Steven H. – MD	Consultants in Epidemiology & Occupational Health, LLC
40	Lee, Sumin	Not provided
41	Levy, Trudy	Not provided
42	Lopez, Daniel	Not provided
43	Martin, Robert	East Valley Water District
44	McCollum, Timothy	McCollum and Bunch Law Offices, on behalf of the South El Monte Operable Unit Joint Defense Group
45	McMahon, Carol	Not provided
46	Menna, Alexandra	Not provided
47	Misqueuz, Jan	Center for Community Action and Environmental Justice
48	Moller, William	Not provided
49	Nurse, Sandra	Sierra Foothill Laboratory Inc
50	Opdebeeck, Herwig	Opdebeeck Consulting, Switzerland
51	Owen, Robert A.	City of Rialto
52	Pagliari, Elaine	Not provided
53	Pearthree, Genevieve	Center for Community Action and Environmental Justice
54	Peekema, Richard M.	Citizen, retired chemist
55	Plambeck, Lynne	Santa Clarita Organization for Planning and the Environment
56	Prentice, Robert	Not provided
57	Ram, Shree Jennifer	Not provided
58	Raskin, Bernard	Not provided
59	Raskin, David	Not provided
60	Raskin, Dorri	Not provided
61	Raskin, Edward	Not provided
62	Raskin, Florence	Not provided
63	Raskin, Joyce Lee	Not provided
64	Raskin, Shirley	Not provided
65	Ronk, Theresa	American Thyroid Association
66	Scott, Lorraine	Not provided

<i>Number</i>	<i>Commentator(s)</i>	<i>Representation</i>
67	Shannigan, Ruth	Not provided
68	Shapiro, Murray	Not provided
69	Sharp, Renee	Environmental Working Group
70	Solomon, Gina – MD	Natural Resources Defense Council
71	Soto, Nell – Senator	California State Senate
72	Southwell, Linda	Not provided
73	Stevens, Greg	Not provided
74	Stevens, Phillip J.	Not provided
75	Stevens, Sherri	Not provided
76	Stewart, Mic	Metropolitan Water District of Southern California
77	Stordahl, Jeffrey	Not provided
78	Strock, James	Council on Water Quality
79	Swenson, Stella	Not provided
80	Taylor, Anne	Not provided
81	Taylor, Elizabeth	Not provided
82	Taylor, Ramona	Not provided
83	Thomas, Margaret	Not provided
84	Van den Bossche, Ed	Not provided
85	Van Dyke, Paul –Chief of Staff for Sen. Soto	California State Senate
86	Ventura, Andria	Not provided
87	Washburn, Simon	Center for Community Action and Environmental Justice
88	Wilson, Dick	Anaheim Public Utilities Department
89	Wiseman, Daniel – MD	Not provided
90	Wulff, Charles C. and Travis, Delite	American Water Works Association, CA-NV Section
91	Yamachika, Nira	Orange County Water District
92	You, Jun Kyung	Not provided
93	Youngblood, Ed	West Hills Neighborhood Council
94	Illegible name	Not provided
95	Illegible name	Not provided
96	Set of 3511 form letters from various citizens	Citizens
97	Barbara Boxer and Dianne Feinstein	United States Senate
<b><i>The following commentators provided comments after the close of the formal public comment period</i></b>		
98	Godina, Tomas	West Hills Neighborhood Council
99	Holman, Emma	West Hills Neighborhood Council
100	Pelez, Maria	West Hills Neighborhood Council



<i>Number</i>	<i>Commentator(s)</i>	<i>Representation</i>
101	Sadon, Hadar	West Hills Neighborhood Council
102	Samuel, Bilha	Woodland Hills
103	Shamay, Ronit	West Hills Neighborhood Council
104	Shwartz, Orit	West Hills Neighborhood Council
105	Smith, Brian	West Hills Neighborhood Council
106	Smith, Carmen	West Hills Neighborhood Council
107	Mays, Cindy K.	West Hills Neighborhood Council
108	Tucker, Lori	West Hills Neighborhood Council

The following summarizes and responds to the comments.

Note: Unless otherwise noted in the comment summaries, the numbers in brackets following the comment summaries correspond to the commentator(s) having provided the comment.

### **Requesting implementation of the proposed MCL of 6 pbb**

Comments were received urging the implementation of the proposed MCL for perchlorate. [1, 22, 23, 29, 38, 48, 56, 57, 68, 73, 74, 83, and 96]

*The concern, interest, and support is noted. Thank you.*

### **Requesting implementation of a lower MCL**

A number of commentators requested that the Department lower the proposed MCL. Reasons for lowering the MCL included the desire to have the most stringent drinking water standards in the country (or world) and the general belief that drinking water should contain no perchlorate. Many commentators also cited recently released Centers for Disease Control and Prevention (CDC) studies, other studies, or specific opinions regarding OEHHA's development of the public health goal (PHG) as reasons for lowering the MCL. Some commentators requested that the Department postpone implementation of an MCL for perchlorate until OEHHA has re-visited the development of the PHG, taking into consideration more recent studies. One commentator suggested a new means of regulating perchlorate, other than directly implementing an MCL for perchlorate. [1, 2, 4-7, 9, 12-14, 16-18, 21, 25-32, 40-42, 45-47, 50-53, 55, 58-64, 66, 67, 69-72, 74, 75, 77, 79-82, 84-87, 89, 92-95, 97, and 98-108].

*The Department was utilizing the PHG as mandated by section 116365(b)(1) of the Health and Safety Code. The PHG was established by OEHHA, an arm of the California Environmental Protection Agency, in accordance with section 116365(e)(1) of the Health and Safety Code. The PHG and its derivation is not the subject of the proposed regulation and is beyond the scope of the proposed regulatory action. Therefore, responses to the specifics of the comments received on this topic are not necessary.*

*With respect to the comments requesting the MCL be set below the established PHG; section 116365(a) of the Health and Safety Code requires the Department to adopt a*

*primary drinking water standard that is “as close as feasible to the corresponding public health goal.” Considering the mandates set forth for the Department in section 116365(b)(1) of the Health and Safety Code and that the PHG is a concentration of a contaminant “that is not anticipated to cause or contribute to adverse health effects, or that does not pose any significant risk to health” [section 116365(c)], the Department’s legal responsibilities have been met and an attempt by the Department to adopt an MCL below a PHG could not be legally justified under current statute. The Department will re-visit the need to revise the MCL if a revised PHG is established.*

*Regarding the requests for the Department to postpone the setting of an MCL for perchlorate until OEHHA has taken into consideration recent studies to determine if the existing PHG needs to be adjusted, section 116293(b) of the Health and Safety Code the Department mandates that the Department establish an MCL for perchlorate consistent with the Health and Safety Code. The proposed MCL has been established in a manner consistent with the Health and Safety Code. The Department believes it is in the best interest of the public to establish an MCL as quickly as possible. Additionally, it should be noted that pursuant to section 116365(g), the Department is mandated to consider a lower MCL if OEHHA, as a result of further review, establishes a lower PHG.*

#### **Requesting implementation of a higher MCL**

Several commentators believed the proposed MCL was too low. [8, 10, 15, 19, 44, 78] Many of these commentators also had fiscal related comments relevant to their belief that the proposed MCL is too low. Those specific comments are addressed in the “Fiscal analysis and cost-benefit related comments” section below.

Commentator 8 stated that, “It appears that the selection of the low level of 6 ppb MCL for perchlorate is based on an agenda to shift the burden of this cleanup from the responsible parties to certain third parties as it relates to perchlorate or nitrate problems and further to shift the burden of the larger scale nitrate problems to certain parties that have no responsibility for the groundwater nitrate contamination.” The commentator further noted that many locations in California have significant nitrate contamination and “the attempt to isolate perchlorate as a separate problem is inappropriate.”

*The Department does not fully understand the point the commentator is attempting to make. Although the Department recognizes that perchlorate contamination of drinking water sources has not been caused by the affected public water systems, the Department has no authority to require the responsible party to mitigate perchlorate contamination and the proposed regulatory action does not do so. The Department’s statutory responsibility is to regulate public water systems and to establish an MCL for perchlorate as mandated by sections 116293 and 116365 of the Health and Safety Code. As a result, the requirements of the proposed regulation apply directly to public water systems. The nitrate MCL has been in place for many years and is not the subject of this regulation; therefore, water systems are already required to meet the nitrate MCL, regardless of the establishment of a perchlorate MCL. Systems treating for nitrate that*

*may also be providing perchlorate treatment as a complimentary benefit, were taken into consideration in the development of the proposed regulation.*

Commentators 8, 19, and 44 noted that EPA has adopted a “safe level of 24.5 ppb” and that at one time the U.S. Department of Defense considered 200 ppb a safe level for perchlorate. Commentator 44 questioned the derivation of the PHG and compared the PHG to the U.S. EPA’s drinking water equivalent level (DWEL). Commentator 19 expressed the opinion that there is no difference in public health protection between the U.S. EPA DWEL of 24.5 ppb and OEHHA’s 6 ppb, stating that OEHHA’s derivation of its PHG was “notably conservative” since it was not based on adverse effect thresholds. Based on the opinion that no health benefits would be gained by setting the MCL at the PHG of 6 ppb in comparison to the U.S. EPA’s DWEL of 24.5 ppb, while also noting the OEHHA applied a safety factor of 10 when establishing the PHG, commentator 19 also stated their belief that there is sufficient cause for the Department to set the MCL at a higher level. Commentator 78 noted that the findings of the NAS led to a U.S. EPA preliminary regulatory level of 24 ppb. As a result, the commentator similarly stated that the PHG is overly conservative and that an exceptionally strong level of protection could be achieved at a level higher than 6 ppb.

*Section 116365(a) of the Health and Safety Code requires the Department to adopt a drinking water standard at a level “as close as feasible to the corresponding public health goal placing emphasis on the protection of public health” to the extent technologically and economically feasible. The Department feels that it is both technologically and economically feasible to treat water to 6 ppb and has therefore proposed an MCL of 6 ppb pursuant to section 116365. It is beyond the scope of this regulatory action, as well as the Department’s authority and expertise, to question OEHHA’s derivation of its PHG. That said, the Department directs the commentator to subsection 116365(c) of the Health and Safety Code, which requires the PHG to be established at a level, with an adequate margin of safety, that is not anticipated to cause or contribute to adverse health effects.*

Commentator 10 noted that perchlorate is one of many goitrogens to which the public is exposed to and that the “risks from perchlorate result only from the incremental effect of iodine uptake inhibition above and beyond any potential inhibition already caused by other goitrogens.” The commentator cited a number of studies, as well as their belief that OEHHA’s PHG determination is flawed, in support of the commentator’s position. The commentator would like OEHHA to revisit its derivation of the PHG.

*The Department was utilizing the PHG as mandated by section 116365(b)(1) of the Health and Safety Code. The PHG was established by OEHHA, an arm of the California Environmental Protection Agency, in accordance with section 116365(e)(1) of the Health and Safety Code. The PHG and its derivation is not the subject of the proposed regulation and is beyond the scope of the proposed regulatory action. Therefore, responses to the specifics of the comments received on this topic are not necessary.*

## **Fiscal analysis and cost-benefit related comments**

### *Misc.*

Commentator 55 stated the desire to have the MCL set at non-detect since “there seem to be no financial implications from requiring such a level”, which was based on a newspaper article (copy supplied by the commentator) from the general manager of Castaic Lake Water Agency where he was quoted as stating, “Once you’re treating it to 6 parts per billion, nondetectable is not costing you that much more”. Commentator 86 stated their belief that it would be “financially responsible to set a lower drinking water standard, especially if we hold the responsible parties accountable” and that setting the standard at 6 ppb “effectively wipes out a great deal of responsibility born by responsible parties.” Commentator 86 also noted that the fiscal analysis did not include detailed health-related costs.

*The proposed MCL of 6 ppb is identical to the public health goal (PHG). The PHG is an “estimate of the level of the contaminant in drinking water that is not anticipated to cause or contribute to adverse health effects, or that does not pose any significant risk to health” [Section 116365(c) of the Health and Safety Code]. Therefore, coupled with section 116365(a), requiring the Department to adopt an MCL as close as technologically and economically feasible to the PHG, the Health and Safety Code does not contemplate having the Department set an MCL lower than a PHG. Additionally, there would be financial implications from setting the MCL at “non-detect”, which is 4 ppb. Based on monitoring data provided by public water systems, an estimated 29 additional public water systems would be affected and would be required to incur capital and ongoing costs to comply with an MCL of 4 ppb. (data from our perchlorate website.) It should be noted that this does not preclude a water system from establishing a self-imposed goal of “non-detect.” Although the Department may agree that responsible parties should be held accountable for the financial costs incurred by affected public water systems, the Department does not have the statutory authority to require parties responsible for perchlorate contamination of drinking water sources to pay for the cost of cleaning up those contaminated sources. With regard to including detailed health-related costs in the fiscal analysis, since the PHG is an “estimate of the level of the contaminant in drinking water that is not anticipated to cause or contribute to adverse health effects, or that does not pose any significant risk to health,” the Department does not anticipate that there will be any health-related costs at the proposed MCL.*

Commentator 69 stated that Department’s cost-benefit analysis “highly inflated” the costs to public water systems and the general public because many of the costs are recoverable by water systems from those parties responsible for the perchlorate contamination. Therefore, the commentator expressed the desire to have the MCL set at 1 ppb.

*The Department is statutorily responsible for regulating public water systems and for establishing primary drinking water regulations with which public water systems must comply. (see Health and Safety Code section 116325) Therefore, the proposed regulation*

*sets forth requirements for public water systems only. The Department's understanding of the mandate in section 11346.3(a) of the Government Code, as well as section 116365(a) & (b) of the Health and Safety code, is that the entity directly affected by the proposed regulation (i.e. public water systems) is the appropriate focus for the fiscal analysis. Whether or not affected public water systems will be able to recover the costs of compliance from those parties responsible for the perchlorate contamination cannot be determined and, therefore, is beyond the scope of this regulatory action.*

*Other affected parties:*

Commentator 19 expressed the opinion that the Department's fiscal impact was inadequate because it didn't consider the economic impact on "other affected parties" and limited its impact to public water systems only. The commentator noted that other affected parties would likely include aerospace and chemical companies, the U.S. Department of Defense, flare manufactures, fireworks manufacturers, agricultural businesses, and "other entities required to remediate sources of drinking water affected by their operations to levels **below** any proposed MCL" [emphasis provided by the commentator]. In support of the commentator's argument, the commentator noted that section 116365(b)(3) specifically includes "other affected parties" and that when the statute was established by legislature (Senate Bill 1307), previous versions did not include such phrasing. As a result, the commentator concluded that the statute "supports a broad cost-benefit analysis that takes into account the true cost of compliance and not simply a reference to the budget allocations of public water systems." The commentator also referenced section 11346.3 of the Government Code in attempting to establish the need for the Department to include the fiscal impact to entities other than public water systems. In brief, the commentator believes the Department is required to include remediation costs for sites that contribute to waters contaminated with perchlorate. In addition, commentator 44 expressed concern that the Initial Statement of Reasons "provides no indication that DHS did, in fact, consider the cost to other affected parties" and that the cost of complying with a 6 ppb standard would not be insignificant to those in the SEMOU [South El Monte Operable Unit] Group. Commentator 44 also stated that the Department did not consider the cost to other affected parties, including the aggregate cost of compliance when establishing the 6 ppb MCL. For example, the commentator noted that the costs to the party it represents would be significant and that they should not be financially responsible for perchlorate contaminated site clean-up costs. Commentator 78 expressed an opinion on why the statutes require economic considerations, i.e. "economic calculations help set priorities" and "when you [the Department] set a regulation, you try to set it at a level with the least cost." The commentator questioned the allocation of resources with respect to what the commentator believes to be a proposed MCL that is overly conservative and requested that the regulation be implemented with "an eye toward protecting the resources that may otherwise become unavailable for other better uses for health and environmental protection." The commentator noted that the economic analysis does not contemplate the impacts on other affected parties, such as farmers, aerospace and chemical companies, water purveyors and consumers, and the Department of Defense. Additionally, commentator 8 stated their belief that the Department has not complied with its statutory requirement, noting that the

“aggregate cost of compliance will be disproportionately borne by parties that are not responsible for the perchlorate contamination.”

*The Department is statutorily responsible for regulating public water systems and for establishing primary drinking water regulations with which public water systems must comply. [Health and Safety Code section 116325 and section 116365(a)] Therefore, the proposed regulation sets forth requirements for public water systems only. The Department’s understanding of the mandate in section 11346.3(a) of the Government Code, as well as section 116365(a) & (b) of the Health and Safety code, is that the entity directly affected by the proposed regulation (i.e. public water systems) is the appropriate focus for the fiscal analysis. The Department has taken this approach with all other regulations. It is beyond the scope of a proposed drinking water regulation to contemplate how requirements specific only to public water systems may be otherwise used by other regulatory agencies. With regard to setting the MCL at a level with the least cost, pursuant to section 116365(a) & (b) the Department is required to set the MCL as close to the PHG as is feasible, both technologically and economically. The Department has determined that it is economically (and technically) feasible for affected public water systems to comply with the proposed MCL even though the proposed MCL is not at the least cost level. Although the Department agrees that resources should be allocated to those uses that will result in the best of public health protection, the Department believes that the MCL is not overly conservative and that reducing exposure to perchlorate, particularly among infants and pregnant women, is a high priority that will result in important public health benefits.*

#### *Fiscal data concerns*

Commentator 15 expressed the opinion that the Department’s feasibility analysis for compliance with the proposed MCL of 6 ppb is “grossly misstated,” noting that “information gathered from the state’s leading environmental engineering firms, the groundwater remediation industry, and experience derived from seven years of litigating multi-million dollar lawsuits provide a more accurate view of the projected clean-up costs...”. In support of the commentator’s opinion, the commentator referred to capital costs and annual operations and maintenance (O&M) costs supplied by “one of the state’s leading environmental engineering firms” (firm not disclosed) as an “objective assessment” of costs associated with treating groundwater. The commentator then took the cost values and applied them to 223 wells. The commentator stated that the number of wells needing remediation (223) were obtained based on information taken from the Department’s website. Furthermore, the commentator stated that the Department “must also take into account other considerations such as, separate treatment for agricultural wells and irrigation systems supplied with Colorado River water containing 4 ppb to 6 ppb perchlorate,” “must consider the added costs of investigation,” and that onsite soil remediation costs must be taken into consideration. Following the summary of total costs presented by the commentator, the commentator noted that, “It would be intellectually dishonest to assume that all of these extraordinary costs will be paid by private parties, such as manufacturers who used and disposed *legally* of perchlorate at their facilities under the laws in effect at the time.”

*Without a detailed breakdown of the derivation of the commentator's 223 wells cited as needing remediation, it's difficult to be specific about the differences between the commentator's engineering firm's evaluation and the Department's fiscal impact analysis. However, it appears that the discrepancy between the Department's number of wells needing treatment installed and the commentator's is likely due to a number of factors not considered by the commentator. For example, it appears that the commentator used data from the Department's website that includes monitoring wells, agricultural wells, as well as pending, standby, inactive, destroyed, and abandoned sources. While the commentator appeared to have excluded destroyed and abandoned sources from their evaluation, the other sources should have also been excluded since they are not a drinking water sources that would be required to comply with the proposed regulations. Additionally, the commentator appeared to have failed to exclude sources that have already been provided with treatment.*

*Regarding the capital cost and annual O&M cost ranges presented by the commentator, the commentator noted that the values were developed by "one of the state's leading engineering firms," that flow rate and influent perchlorate differences were considered for capital costs, and that the range in capital cost is related to inclusion of pipelines associated with the wells. Again, a detailed breakdown of the how the ranges were derived was not included, making it difficult to assess the differences. However, the average capital and annual O&M costs used by the Department falls well within the range presented by the commentator. The Department's costs were developed utilizing two of the state's leading perchlorate/ion exchange treatment installation organizations and was based on as-built/operation costs from systems currently treating for perchlorate. In conjunction with this information, the Department used an approach similar to the one used by EPA to determine O&M costs for ion exchange of arsenic (see "Technologies and Costs for Removal of Arsenic from Drinking Water", December 2000, EPA 815-R-00-028). One primary difference between the Department's approach and EPA's is that the Department's perchlorate values assumed resin replacement and disposal. Additionally, the Department used a 20-year amortization period, as opposed to what appears to be a 30-year period used by the commentator (although it's unclear whether the commentator used amortized values).*

*While no detail was provided by the commentator with respect to the "inclusion of pipelines" associated with wells needing treatment, it should be noted that the Department only includes costs common to all treatment installations. Although the Department's figures include associated piping, unique costs specific to one or a few water system only would not be included.*

*Regarding the commentator's statements that the Department must consider the added costs of investigation and on-site soil remediation, such costs are beyond the scope of this regulatory action in that the proposed regulation places requirements only on public water systems supplying drinking water. Similarly, with respect to the commentator's statement regarding extraordinary costs that may be incurred by manufacturers who*

*disposed of perchlorate (legally or otherwise), the Department does not believe the proposed regulation package is the proper forum for debating the legality of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and other related laws or regulations.*

Similarly, commentator 8 expressed concern that the Department's cost estimates for treatment were low, noting that the costs do not "correlate with the current claims and demands for resolution of the Perchlorate issues relating to the San Gabriel Basin" and further notes that, "The current remediation costs for the San Gabriel Basin published by the San Gabriel Basin Water Quality Authority (WQA) for fiscal year 2006-2007 is \$75,000,000,..." The commentator also stated that, "...it is inappropriate for DHS to propose an MCL that could subject parties, such as small private businesses to these costs when they have no connection to the perchlorate contamination." The commentator also stated their belief that the selection of the 6 ppb MCL (proposed) is "based on an agenda to shift the burden of this cleanup from the responsible parties to certain innocent third parties as it relates to Perchlorate or nitrate problems..." and expressed concern that, in most cases, the perchlorate remediation is not being paid for by the rate payers.

*Details of the costs cited by the commentator were not provided, making it difficult to address the concerns of the commentator. Given the figures that were provided by the commentator and the remaining discussions by the commentator, it is likely that the cost values provided by the commentator included factors such as soil remediation, investigative work (beyond the monitoring required by the proposed regulation package), potential legal fees, and the presence of other contaminants. If so, the Department believes such costs, including those costs that are assumed to be passed on to responsible parties by affected public water systems, are beyond the scope of this regulatory action in that the proposed regulation places requirements only on public water systems supplying drinking water. The Department also does not believe the proposed regulation package is the proper forum for debating the legality of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and other related laws or statutes. The Department does not understand the commentator's statement concerning the "shift the burden of this cleanup from the responsible parties to certain innocent third parties." The commentator may be referring to the affected public water systems and their customers as innocent third parties. Although that may be the case, the Department's proposed MCL is based on the statutory requirements placed on the Department, namely the Department is responsible for setting primary drinking water standards with which public water systems must comply. The Department has no authority to require responsible parties to comply with the MCL or to reimburse public water systems for the cost of compliance.*

Commentator 19 stated that, "DHS is required under Health and Safety Code Section 116365 to set an MCL as close as economically feasible to the PHG", noting that the Department is "required" to and "must" conduct its cost/benefit analysis pursuant to an August 1, 1999, Department document titled, *Procedure for Reviewing Maximum Contaminant Levels (MCLs) for Possible Revision.*" The commentator then provided



two partial quotes of sentences from the Department's three page document to establish the statement that, "In setting the MCL, DHS must weigh the incremental compliance costs against the incremental health benefit of achieving increasingly stringent MCLs."

*While unclear as to the point the commentator is making, the commentator subsequently expressed the opinion that the Department's methodology for translating public health benefits is "rudimentary" since it is primarily based on the number of people exposed; implying that the Department has not followed its own procedure. The commentator appears to object to the procedure, yet at the same time expresses the opinion that the fiscal analysis is not adequate because, in their opinion, the Department did not follow the procedure. The commentator should note the following regarding this topic: 1) The procedure is for reviewing existing MCLs for revision. Perchlorate does not have an MCL. 2) In establishing the proposed MCL for perchlorate the Department **did** evaluate the incremental compliance costs against the incremental health benefits in a manner similar to the process outlined in the procedure. The Department directs the commentator to the benefit determination section of the document, which clearly notes that benefit determination is based on theoretical adverse health effects and that, for non-carcinogens, the benefit determination is based on the number of those exposed.*

Commentator 88, while in support of the proposed regulation, stated their belief that the Department's large water system average cost estimates for treatment and operations and maintenance (O&M) are low, citing a cost study prepared for Anaheim in 2002. The commentator questioned whether sewer discharge related costs were considered. Additionally, commentator 88 questioned whether the cost analysis incorporated costs that occur when perchlorate levels in a source approach the MCL, further stating that, "Due to water supply requirements, water utilities may need to install treatment systems before perchlorate levels actually reach the MCL." Commentator 91 expressed the same concerns as commentator 88, further stating that the cost estimates should include "those [sources] potentially requiring treatment," to reflect potential statewide impacts.

*As noted by the commentator, the cost values cited in the Initial Statement of Reasons are average costs. As such, the estimated costs used in determining the average costs of treatment for wells of higher capacity were higher. Without the details of the cost study referenced by the commentator, an explanation of the differences between the Department's costs and those in the study cannot be provided. With respect to sewer fees, the Department did not directly incorporate sewer discharge permit fees. However, the Department's values did contemplate factors such as off-site resin transport, disposal, and destruction costs, which are generally more expensive than (or on par with) on-site regeneration and disposal related costs such as the costs of sewer discharge.*

*The Department's treatment costs only considered the cost for public water systems that would be non-compliant with the proposed MCL (based on the Department's data from 2000-2003). However, additional monitoring costs for systems with detections was included and the treatment cost on a per-well basis would not be different for systems choosing to be proactive by installing treatment before exceeding the MCL. Section*

*116365(b) of the Health and Safety Code requires the Department to consider the technical and economic feasibility of compliance with the proposed drinking water standard. The Department does not think it is appropriate to include an estimate of costs that may never be realized as a result of systems that have the “potential” of exceeding the proposed MCL.*

Commentator 91 stated that the regulation package should include the comprehensive cost analysis document, including the assumptions used by the Department, as an appendix to provide a clear understanding and basis of the cost estimate tables and findings provided in the Initial Statement of Reasons. In particular, the commentator noted that, “Reference is only made to the EPA arsenic approach (EPA 815-R-00-028) as the approach used by DHS”. Additionally, the commentator stated that “the assessment does not provide a listing of the cost items, both fixed and renewable resources, assumptions used, and potential additional costs arising from CA environmental regulations or CA agencies.”

*While the commentator stated that reference is only made to the EPA arsenic approach, in the same paragraph the commentator also cites the specific differences in the approach cited in the Initial Statement of Reasons that the Department used, making the comment hard to understand. In addition, the Department does not believe reiterating information that is readily accessible via EPA’s website and publications is necessary. Regarding assumptions, the Department would like to direct the commentator to page 11 of the Initial Statement of Reasons (ISOR), which lists a number of assumptions used. Other assumptions are dispersed throughout the ISOR. The Department believes the ISOR contains the pertinent cost information and assumptions used to determine the technological and economic feasibility of the proposed MCL as required pursuant to section 116365 of the Health and Safety Code. In addition, the level of detail concerning cost information and assumptions provided in this rulemaking is consistent with past regulatory packages for establishing MCLs.*

Commentator 91 questioned the discrepancy between the number of affected large water systems noted in the narrative portion of the Initial Statement of Reasons (ISOR) on page 12 (32 large systems) and the number presented in Table 5, on page 13 (34 large systems).

*The 32 large systems referred to in the narrative portion on page 12 is a typographical error and should be 34, as subsequently referred to on page 13. Thank you for pointing out the discrepancy.*

*Health benefits/effects not detailed – SB 187*

Commentator 12 expressed frustration that the majority of the fiscal analysis pertained to economic impacts, as opposed to health impacts, and referenced “a bill that would have required that the cost effects that are associated with those health impacts be considered in this analysis.” The commentator also thought the economic analysis should include responsible party clean-up costs to then be used to reduce the impact on rate payers and

water providers. Similarly, commentator 71 expressed the desire to have the MCL set at 2 ppb based on “widespread consensus in the water treatment industry that levels of 2 ppb are technically an economically feasible.” Commentator also referred to vetoed SB 187, which “would have given greater weight to health considerations in the process of setting safety standards for contaminants,”

*The Department suggests that commentator 12 refer to OEHHA’s public health goal (PHG) document for more details regarding health effects. While the health effects are summarized in the Initial Statement of Reasons and were an important consideration when establishing the proposed MCL, the Department is obligated to adopt an MCL as close to the PHG as technically and economically feasible. Therefore, with OEHHA’s PHG document detailing health effects, it is understandable that the Initial Statement of Reasons would have more discussion of economic impact. Commentator 12 appears to be referring to Senate Bill 187, which as the commentator notes, was vetoed by the Governor. Commentator 71 clearly refers to SB 187. While comments regarding a vetoed bill would not typically be addressed, it may be worth noting that had SB 187 become law, it would have had no effect on this regulatory action since the bill’s additional economic analysis applied only to MCLs proposed to be higher (less stringent) than the PHG. The proposed MCL for perchlorate is equal to the PHG.*

## **Section 64432**

### *Subsection (a)*

Commentator 91 noted that the reference made to subpart (k) of the proposed amended section 64432 should be deleted in that subsection (k) is specific to subsection (b)(1), which in turn specifically proposes to exclude perchlorate.

*The “and (k)” portion of the proposed language was a typographical error and has been deleted. Thank you.*

### *Detection Limit for Purposes of Reporting (DLRs) and analytical methods*

Commentator 49 noted that “the analytical method availability in [the] notice of proposed rulemaking mentions only EPA [method] 314.0”, but that EPA methods 314.0, 314.1, 331.0, and 332.0 have all been proposed to conduct perchlorate analyses under UCMR2. The commentator expresses the opinion that methods 331.0 and 332.0 are superior to 314.0 or 314.1 and, as such, “language in the rulemaking should be inclusive of these newer technologies.” Furthermore, the commentator stated that costs for the newer methods would be only about 12 percent higher than that noted in the statement of reasons for method 314.0. While the commentator noted that EPA is not yet issuing approval to labs for use of 331.0 and 332.0, the commentator suggested that in the interim the Department develop a process for certification of the methods.

*The commentator appears to be under the impression that the proposed perchlorate regulation would limit all future perchlorate analyses to method 314.0, basing their*

*conclusion on two references to method 314.0 in the Initial Statement of Reasons, which merely refer to the method as that available and used in the data gathering process for the development of the regulation. Generally, the Department does not directly dictate the use of a particular analytical method and the proposed perchlorate regulation text makes no reference to a specific method. Section 64415 of Title 22 CCR, in conjunction with section 116390 of the Health and Safety Code, requires analyses to be performed by laboratories certified by the Department's Environmental Laboratory Accreditation Program (ELAP). If certification is desired for methods 331 and 332, the proper vehicle to obtain certification is through EPA's certification program and subsequently through ELAP.*

Commentator 69 noted that the Department's detection limit of 4 ppb "does not reflect the current detection technology and constructs an outdated and artificial technological barrier to establishing a perchlorate MCL below four parts per billion."

*The Department's proposed MCL is 6 ppb, which is identical to the public health goal. Therefore, a lower MCL cannot be legally justified at this time. The Department believes the proposed DLR of 4 ppb is adequate to determine compliance with the proposed MCL of 6 ppb.*

### **Section 64432.3(a)**

Several commentators [11, 20, 33, 90, 91] suggested that the vulnerable period be extended to include August and September, noting that such an extension would be consistent with the Department's unregulated chemical monitoring rule (UCMR) for perchlorate and has been historically acceptable to the U.S. EPA. Two commentators [11, 90] also noted that the additional two summer months would be important because; 1) many groundwater systems participate in Metropolitan Water District's "in-lieu" program and 2) "the 2-month extension provides a compliance monitoring window open to 12 months."

*The Department agrees that the vulnerable time period should coincide with the May 1 through September 30 timeframe the Department set forth for UCMR monitoring. This was an oversight. The proposed regulation has been revised to reflect this expanded vulnerable time period.*

### ***Implementation Schedule***

Commentators 11 and 90 expressed concern that depending on the effective date of the regulation, coupled with the specified vulnerable timeframe, water systems may have seven months or less to comply with the regulation. This is based in part on the commentators' impression that compliance with the regulation "will only be required once the initial monitoring sample collection process is initiated". In support, they cite the following scenario: Assume the regulation becomes effective between November 20, 2006, and April 29, 2007. Collection of at least one initial sample must occur between

May 1, 2007, and July 31, 2007. Therefore, the commentators stated that water systems may have seven months or less to comply with the regulation.

Both commentators [11, 90] also noted that federal regulations typically have an implementation schedule, giving systems lead time to prepare for compliance needs (e.g. design, bidding, construction, etc.). The commentators suggested that compliance with the perchlorate regulation begin 18 months from the date of publication. Commentator 43 expressed a similar concern, noting that the regulation does not have specific dates for compliance or any type of implementation schedule.

*Given the mandate of section 116293(b) of the Health and Safety Code, the public health goal for perchlorate having been established in March 2004, previously required UCMR monitoring, the Department's notification level of 6 ppb (since March 2004, revised from a previous 4 ppb level) set pursuant to section 116455 of the Health and Safety Code, and the fact that in California perchlorate contamination is related to specific historical, relatively well identified industrial activities, the Department believes water systems have had ample time to prepare for the onset of the regulation. Additionally, and most importantly, given the relatively acute nature of the contaminant, the Department believes compliance with the proposed MCL without delay, as stated in proposed section 64432.3(d), best serves the public's interests.*

#### **Section 64432.3(b)**

Several commentators [11, 20, 33, 90, 91] suggested that since the Department's UCMR monitoring began on January 1, 2001, and included perchlorate monitoring, the grandfathering of data should begin on January 1, 2001, rather than June 30, 2001, as proposed in the regulation. One commentator [33] suggested allowing grandfathering of data subsequent to June 30, 2000, since they performed UCMR monitoring in August 2000.

*The Department agrees with the commentator's that suggested grandfathering of data to be consistent with the Department's previously required UCMR perchlorate monitoring. However, it should be noted that the Department's UCMR regulation became effective on January 3, 2001, and the Department believes grandfathering of data gathered prior to this date would not be appropriate. The proposed regulation will be revised to reflect the change accordingly.*

#### **Section 64432.3(d)**

Commentators expressed that it would be unreasonable to require a water system to collect *and* analyze a confirmation sample within a 48-hour timeframe. Two commentators [20, 33] suggested that it be required that the sample be collected within 48-hours and subsequently be analyzed "within the analytical holding time by the

laboratory”. Commentator 88 noted that if weekends and holidays are included a 96-hour turnaround time would be more practicable. Commentator 90 suggested that perchlorate have a 24-hour confirmation timeframe, consistent with nitrate, to avoid possible confusion by water system personnel and to provide a consistent treatment of acute contaminants.

*Given that consumption of perchlorate in excess of the MCL may result in adverse health effects within a relatively short period of time and is therefore considered a contaminant that poses an acute risk, the Department believes it is imperative to quickly determine (or confirm) whether or not the public is at risk. The need for such a determination is not diminished by the day of the week. The analytical method(s) for perchlorate is not unlike nitrate, which has a 24-hour confirmation collection and analyzing timeframe, and has been implemented for a number of years. That said, the Department recognizes that the risk associated with perchlorate is not as immediate as that of nitrate or nitrite and believes the 48-hour timeframe is appropriate.*

With respect to proposed section 64432.3(d)(B), where the average of the original and confirmation result do not exceed the MCL, commentators 20 and 33 stated that it would be more reasonable to require water systems to inform the Department of results within seven days of receipt of the *confirmation* sample result, as opposed to the seven days within receipt of the original result.

*Because the confirmation sample will be collected and analyzed within 48-hours of receipt of the original result that exceeded the MCL, the water system will essentially have five days available to notify the Department of average results that do not exceed the MCL. The Department believes five days provides ample time for notifying the Department.*

### **Section 64432.3(f)**

Commentator 90 stated that no variance should be allowed for any contaminant regulated as an acute contaminant and that doing so is contrary to basic public health principles. The commentator further states that if variances are allowed for small water systems, then the entire treatment of perchlorate as an acute contaminant is in question.

*Section 116430(a) of the Health and Safety Code allows the Department to grant a variance from a primary drinking water standard, not excluding those standards for acute contaminants. In addition, the federal Safe Drinking Water Act (SDWA), the requirements to which the Department must also conform, does not preclude the issuance of a variance for acute contaminants except for microbial agents. However, pursuant to section 300g-4(a)(1)(A) of the SDWA, the Department must also ensure that a variance does not result in an unreasonable risk to health. Thus, the Department agrees with the commentator that it is not acceptable to allow ongoing exposure above the MCL to an acute contaminant such as perchlorate. At the same time, the Department believes that*

*there will be public water systems with sources that can not comply with the MCL and that can not afford to install and operate the best available treatment technologies identified in this regulation. These water systems should be provided the opportunity to use other options to meet the requirements of this regulation. The variance provision provides such an opportunity. For example, a water system could be granted a variance and be allowed to provide bottled water in lieu of treatment. Another variance option could be the use of point-of-use treatment to remove perchlorate. In both cases the water consumed by the public would not result in exposure to perchlorate above the MCL.*

Commentator 91 questioned the clarity of proposed section 64432.3(f), asking the following questions:

1. Is the variance for all water systems or just small water systems?

*Consistent with the section 300g-4 of the SDWA and as indicated in the Initial Statement of Reasons, only those systems serving less than 10,000 persons would be eligible to apply for a variance based on the affordability criteria. The Department agrees that the proposed language lacked clarity in this regard and has amended the section accordingly.*

2. Are there procedures in place for the variance assessment process to ensure public education and participation?

*Yes, pursuant to the SDWA section 300g-4(a)(1)(C), the Department shall provide for a public hearing before granting a variance.*

3. How will affected consumers be informed that the variance will result in water quality that will not meet drinking water standards, including the options considered to meet the standard?

*The Department does not intend to grant a variance for perchlorate that will result in a situation where the public is consuming water that does not meet the perchlorate drinking water standard. The Department recognizes that exposure to acute contaminants such as perchlorate at levels above drinking water standards result in increased health risks. The purpose for allowing a variance to be granted is to provide those public water systems that can not afford to install and operate the best available technology, as defined in the regulation, with the option of using other means such as bottled water and point-of-use treatment to comply with the perchlorate MCL. The Department will provide for a public hearing to present the specifics of the proposed variance and seek public input before deciding whether or not to approve the variance.*

4. Will there be public education programs on the potential health effects if a variance is granted?

*A variance granted pursuant to this regulation will not pose any potential health effects. The Department intends to approve only those solutions proposed by eligible public*

*water systems that will result in drinking water that is in compliance with the perchlorate MCL.*

5. Will there be alternate source water for systems under a variance?

*A public water system seeking a variance may propose an alternate water source, such as bottled water, as a means for meeting the perchlorate MCL.*

6. What is the variance process timeline; i.e. is the variance for a limited time or indefinitely?

*Pursuant to SDWA section 300g-4(e)(5), a variance for small water system is indefinite and must be reviewed no less often than every five years to determine that the conditions of the variance are being met.*

7. Since perchlorate is regulated as an acute chemical, will the Department be monitoring and tracking public health in the areas where a variance has been allowed?

*Since the Department will require a public water system that is granted a variance to implement a solution that will result in compliance with the perchlorate MCL, there will be no need for monitoring and tracking public health in the areas where a variance has been allowed.*

### **Section 64432.8(a)**

Commentators 20 and 33 questioned the clarity of the timeframes for treated water monitoring following a result that exceeds the MCL and states that the section “should be clear that confirmation does not occur until the water supplier receives notification of results.” The commentators also suggested alternative language, which includes suggested timeframes and references specifically to perchlorate.

*The Department believes it is implicit that confirmation does not occur until the water supplier receives notification of the results. After all, one would not know if the treated water exceeds the MCL unless one has received a result. However, the Department acknowledges that the proposed text was ambiguous concerning the specific timeframe for taking a confirmation sample and has revised the regulation text accordingly. The commentators should also note that this section applies to all inorganic treated water monitoring.*



## **Section 64447.2**

Commentators 11 and 90 pointed out that the Department requires biological fluidized bed reactors (BFBR) to be in conformance with the Surface Water Treatment Rule (SWTR) and stated that this additional requirement should have been identified in the Initial Statement of Reasons (ISOR). In addition, both commentators noted that those utilizing ion exchange treatment do not solely rely on disposable resins and often regenerate and reuse resins. The commentators requested that it be clearly noted that ion exchange using either a disposable and/or a regenerated resin process constitute a BAT.

*The Department refers the commentators to the comment section of the ISOR table titled “Perchlorate BAT Determination Matrix”, which states “Post-reactor treatment needed to comply with the SWTR” (for BFBRs). It should also be noted that the ion exchange section of the same table states, “Resin requires disposal or regeneration with brine disposal/destruction.”*

## **Public Notification Sections**

While referencing section 64465, commentators 11 and 90 stated, “The proposed regulation is not explicitly clear on the notification procedure for Tier I and II. While it details requirements for Tier III, the regulation text should be specific for all levels of notification and not require the reader to make assumptions based on current knowledge of acute notification.”

*With the exception of the proposed perchlorate health effects language in appendix 64465-D, section 64465 is an existing regulatory section and only the proposed language is subject to comments. That said, the Department is perplexed by the comment. Section 64465(a), for example, clearly states that each public notice given, except for Tier 3 variance and exemptions related notices, is to contain the information listed in subsection (a). The Department would also like to draw the commentator’s attention to existing sections 64463.1 and 64463.4 for further details regarding Tier I and II notifications.*

Regarding proposed section 64432.3(d)(C), which requires consumers to be notified in accordance with sections 64463 and 64463.1, commentator 91 expressed concern that the proposed regulation text is not clear as to which Tier notification is required in the event of a perchlorate MCL violation.

*The Department agrees with the commentator and has revised the regulation text in subsection (d)(3) accordingly and has included a revision to section 64463.1, “Tier 1 Public Notice,” that specifically requires Tier 1 notification for perchlorate MCL violations and failures to perform timely confirmation sampling.*

**Addendum 2**  
**Response to Comments, Period Ending April 20, 2007**

The Department solicited written comments on the proposed regulation package R-16-04 a second time due to revisions made to the initial proposal. Table 3 presents a record of commentators having submitted comments by written correspondence during the second public comment period.

**Table 3: Commentators Providing Written Comments for the second comment period on the Proposed Perchlorate Standard**

<i>Number</i>	<i>Commentator</i>	<i>Representation</i>
1	Bigley, Steve	Coachella Valley Water District
2	Blanton, Anne	Not provided
3	Brechin, Vernon	Citizen
4	Carr, Catherine	Team Iguana
5	Chrystal, Lawrence	ES Babcock
6	Clark, Krista	Association of California Water Agencies
7	Parcells, Barbara	Citizen
8	Pharman, Dorothy	Citizen
9	Scott, Mary <sup>1</sup>	Citizen
10 <sup>1</sup>	Spitzer, Mike & Lucette	Citizens
11 <sup>2</sup>	Ventura, Andria <sup>2</sup>	Clean Water Action <sup>2</sup>
12	Wilson, Dick	Anaheim Public Utilities Department
13	Yamachika, Nira	Orange County Water District

1. Late submittal.
2. The letter submitting comments by commentator 11 was also signed by the following:
  - Jennifer Sass, Ph.D.; Natural Resources Defense Council
  - Cal Baier-Anderson, Ph.D.; University of Maryland
  - Renee Sharp, M.S.; Environmental Working Group
  - Gina Solomon, M.D., M.P.H.; Natural Resources Defense Council
  - Sujatha Jahagirdar; Environment California Research & Policy Center
  - Davin Diaz, Director; Pathways to a Safe Environment Campaign
  - Lenny Siegel, Director; Center for Public Environmental Oversight
  - Jonathan Parfrey, Executive Director; Physicians for Social Responsibility
  - Debbie Davis; Environmental Justice Coalition for Water
  - Chione Flegal; Latino Issues Forum

The following summarizes and responds to the comments.

**General comments:**

While noting opposition to the proposed change in regulations regarding perchlorate without being specific, commentator 2 expressed concern regarding the potential adverse affects perchlorate may have on human health.

*Without knowing the nature of the commentator's opposition, the Department cannot provide a specific response. The Department is confused why the commentator would oppose a regulation setting a maximum contaminant level for perchlorate when the commentator expressed a clear concern about the effects perchlorate may have on one's health.*

Commentator 3 expressed the desire to “see some additional radionuclide test inserted into this regulation,” going into detail on the desired testing the commentator would like to see.

*No response is necessary. The comment is beyond the scope of the proposed regulation and only those revisions made subsequent to the first public comment are open for comment. The proposed perchlorate regulation does not address radionuclide requirements.*

Commentator 4 thanked the Department for making the process of submitting comments so simple, but expressed concern regarding the deletion of section 64450, pertaining to unregulated chemical monitoring. The commentator noted that they would expect the list of chemicals to grow as opposed to being stricken.

*No response is necessary. Only those revisions made subsequent to the first public comment are open for comment. That said, the commentator should note that those chemicals listed in existing section 64450 have already been monitored in representative locations throughout the state and that the United States Environmental Protection Agency continues to require similar monitoring of public water systems for other unregulated chemicals.*

Commentator 9 expressed displeasure with the documents, noting that the documents are too technical in nature and lack a plain-English summary of the proposed changes. The commentator suggests the inclusion of such a summary and, within the summary, addresses (internet and physical) where the technical documents may be found.

*No response is necessary. The comment is beyond the scope of the proposed regulation and only those revisions made subsequent to the first public comment are open for comment. The commentator is invited to visit the Department's drinking water website at <http://www.dhs.ca.gov/ps/ddwem/>.*

Commentator 10 expressed concern regarding the effects of perchlorate on human health and whether government agencies support the public's health or industry interests. The commentator also noted that such documents should be released and available to allow adequate time for detailed review.

*No response is necessary. The comment is beyond the scope of the proposed regulation and only those revisions made subsequent to the first public comment are open for comment. The commentator is invited to visit the Department's drinking water website at <http://www.dhs.ca.gov/ps/ddwem/> where information regarding perchlorate, as well as drafts of the proposed regulation, has been available for a number of years.*

### **Implementation of the proposed MCL of 6 ppb**

Commentator 7 heartily approves and supports the monitoring of perchlorate.

*Thank you for your comment.*

Commentator 8 expressed concern whether the proposed MCL was protective enough.

*No response is necessary. Only those revisions made subsequent to the first public comment are open for comment.*

### **Requesting implementation of a lower MCL**

Citing a number of studies and describing in detail the adverse health effects related to perchlorate, commentator 11 expressed the desire to have the MCL be set at 1 ppb. The commentator also includes discussion on the technical and economic feasibility of a 1 ppb MCL.

*No response is necessary. Only those revisions made subsequent to the first public comment are open for comment.*

### **Fiscal analysis and cost-benefit related comments**

Commentator 13 raised concerns and noted a correction regarding the treatment costs presented in the Initial Statement of Reasons.

*The comments are not summarized because they are substantially identical to the comments made by the commentator during the first public comment period, then known as commentator 91. Therefore, the Department recommends that the commentator refer to the responses to the comments presented as a result of the first comment period.*

**Section 64432.3(a)**

Commentator 1 suggested language requiring systems providing treatment for perchlorate to monitor in accordance with proposed section 64432.8.

*No response is necessary. Only those revisions made subsequent to the first public comment are open for comment. The commentator should note that proposed section 64432.8 applies to systems providing perchlorate treatment.*

**Section 64432.3(c)**

Commentator 1 notes that the comma after the word “surface” in subsection (2) is unnecessary.

*Commentator 1 is correct and the comma has been appropriately placed. Thank you for pointing out the typographical error.*

**Section 64432.3(d)**

Commentators 1, 6, and 12 suggest that the requirement to re-sample and analyze within 48 hours as required in subsection (1) would be too onerous. Similarly, commentator 5 expresses the same concern and, along with commentator 12, questions the necessity of having to perform confirmation sampling if the source is placed out-of-service for the period of analytical confirmation. Commentator 12 also suggests that a Tier 1 notification only be required when the MCL is exceeded by a significant margin (e.g. twice the MCL). Commentator 12 cites the NAS report as a basis for the suggestion.

*With respect to the 48-hour notification, no response is necessary. Only those revisions made subsequent to the first public comment are open for comment. The commentators may want to review responses to the comments on this topic received during the first public comment period and plan sampling events to avoid the concerns noted. With respect to the Tier 1 notification being appropriate, perchlorate is a non-carcinogen that may lead to adverse health effects in a relatively short period of time if consumed at levels exceeding the proposed MCL of 6 ppb, which is identical to OEHHA’s PHG. Therefore, the Department believes a Tier 1 notification is appropriate.*

**Section 64432.3(e)**

Commentator 1 suggests language clarifying that a detection would be one that is “at or above the DLR.”

*No response is necessary. Only those revisions made subsequent to the first public comment are open for comment.*

**Section 64432.3(f)**

Commentator 13 poses a number of questions pertaining to specific procedures and criteria in the event a variance from the perchlorate MCL is provided.

*No response is necessary. Only those revisions made subsequent to the first public comment are open for comment. The commentator's comment is not specific to the nature of the revision presented for the second public comment period. The commentator may want to refer to the response to the same concerns posed by the same commentator during the first public comment period.*

**Section 64432.8**

Commentator 6 expressed concern that raw sources exceeding the MCL that are subsequently treated to levels below the MCL prior to distribution would be subject to the public notification requirements. Commentator 6 seeks confirmation that raw sources under such conditions would not trigger public notification.

*Section 64432.8 pertains to sampling and analysis of treated water. Raw sources receiving perchlorate treatment prior to distribution will not be subject to public notification unless the perchlorate treatment is inadequate. In the event of inadequate treatment and delivery of drinking water exceeding the proposed MCL, public notification would be required.*

### **ADDENDUM 3**

#### **Corrections, Revisions, and Additions to the Rulemaking File**

1. The following nonsubstantive corrections were made to the final text:

(a) On page 6, in Section 64432 (a) "for asbestos" is underlined. This is a nonsubstantive change because it merely adds a description "for asbestos" to the cross reference to existing Section 64432.2 which contains the subject matter of asbestos. In addition, the "s" in "Section 64432.2." is capitalized in conformity with the current CCR.

(b) On page 13, in Section 64447.2 the section title and the caption of Table 64447.2 A are corrected by adding "s" after "BAT" to match the text in the current CCR.

(c) On page 17, in Section 64463.1(b) the third line "...pursuant to paragraph (a)(4) or (5)" is corrected to read "... pursuant to paragraph (a) (4),(5), or (6)" for internal consistency with newly added paragraph (a)(6).

(d) On page 23, in Section 64465 in Appendix 64465-D, the health effects language for Fluoride is updated by changing the department reference from the Department of Health Services to the Department of Public Health. The telephone number is also corrected.

(e) On page 24, in Section 64465 the extraneous end quotation mark is deleted in the health effects language for 1,4-Dichlorobenzene.

(f) On page 25, in Section 64465 the strikeout of "ch" in trifluoroethane in the health effects language for 1,1,2-Trichloro-1,2,2-trifluoroethan is deleted because it has already been removed in the current CCR text.

(g) On page 26, in Section 64465 in Appendix 64465-F, the caption "CONTAMINANT" was changed to "*Contaminant*" and bold font was removed from "*Health Effects Language*" in conformity with the current CCR.

(h) On pages 31-33 Section 64481 the lettering and numbering hierarchy is corrected to match text in current CCR. Starting on page 31 and ending on page 32:

- (d)(2)(D)2 is corrected to (d)(2)(D)1.A. ,
- (d)(2)(D)2.A. is corrected to (d)(2)(D)1.B.,
- (d)(2)(D)2.B. is corrected to (d)(2)(D)1.C., and
- (d)(2)(D)3. through 6. are corrected to (d)(2)(D)2. through 5.

(i) On page 35, in Section 64481 in Appendix 64481-A the captions "CONTAMINANT" and "MAJOR ORIGINS IN DRINKING WATER" are changed

to “*Contaminant*” and “*Major origins in drinking water*” in conformity with the current CCR.

(j) On page 38, in Section 64481 in Appendix 64481-A above Epichlorohydrin, the captions "Contaminant" and "Major Origins in Drinking Water" have been stricken-out because those captions currently appear in the CCR and are unnecessary as they are already at the beginning of Appendix 64481-A in the current CCR.

(k) On page 39, in Section 64481 in Appendix 64481-A the underline is removed from the Methyl-tert-butyl ether (MTBE) and the corresponding “Major origins in drinking water” language as all this language currently exists in the CCR and indicators for the addition of this language are not warranted.

(l) On page 40, in Section 64481 in Appendix-B, the captions “CONTAMINANT” and “MAJOR ORIGINS IN DRINKING WATER” are changed to “*Contaminant*” and “*Major origins in drinking water*” in conformity with the current CCR.

A complete copy of the final text including the nonsubstantive corrections is In Tab 14.

## 2. Modifications to the Final Statement of Reasons (FSOR):

(a) The June 25, 2007, Statement of Determinations and Business Impact contained in the rulemaking file and located at Tab 10 is incorporated by reference into this Addendum.

(b) The changes to the proposed amendments noticed in the 15-day post-hearing change availability did not affect the fiscal analysis or the Form 399 approved by the Department of Finance on July 12, 2006.

(c) **Clarification.** The third paragraph on page one of the FSOR does not precisely state the statutory mandates directing the Department to establish the perchlorate minimum contamination level (MCL) standard. It is Health and Safety Code Section 116293(b) that mandates that “On or before January 1, 2004, the department shall adopt a primary drinking water standard for percholorate found in public water systems in California in a manner that is consistent with this chapter.” It is Health and Safety Code Section 116365 that mandates that the standard be “...set at a level that is as close as feasible to the corresponding public health goal (PHG)...” established by the Cal/EPA Office of Environmental Health Hazard Assessment (OEHHA), while considering the cost and technical feasibility of treatment and analysis.



### 3. Corrections to the Rulemaking File.

"OEHHA, 2004, Public Health Goal for Perchlorate in Drinking Water, March, Office of Environmental Health Hazard Assessment, California Environmental Protection Agency", which is listed in Tab 4 as a document relied upon, was always available upon request and continues to be available to the public. This document also was and continues to be generally available to the public on the OEHHA link: <http://www.oehha.ca.gov/water/phg/allphgs.html>. The document was inadvertently omitted when the rulemaking file was submitted to the Office of Administrative Law (OAL) for review. The document, in its entirety, is now added to the rulemaking file at Tab 4.

### 4. Augmentation of Summary And/Or Response to Comments.

(a) On page 33 of the FSOR the Department summarized and responded to comments that urged the implementation of the proposed MCL for perchlorate. Several of those commentators, e.g., all of the Commentator 96 form letters, urged the Department to "immediately implement the proposed standard."

**Revised Comment Summary:** Comments were received during 45-day public notice period urging the implementation of the proposed MCL for perchlorate, with a number of commentators requesting the Department to "immediately implement the proposed standard." [1, 22, 23, 29, 38, 48, 56, 57, 68, 73, 74, 83, and 96]

**Revised Department Response:** The concern, interest, and support are noted. Thank you. It is also the Department's desire to set a standard as quickly as possible. Under the Administrative Procedure Act (California Health and Safety Code Section 11340 et seq.) immediate implementation is possible only if done as emergency regulations. The Department chose the nonemergency process because it allows for public participation prior to implementation. Additionally, the regulatory action did not rise to the level of "emergency" as defined in Government Code section 11349.6 and necessary to initiate the emergency regulation process. With the nonemergency process, following public participation and review by the Office of Administrative Law, the perchlorate standard will be effective 30 days after the regulation is filed with the California Secretary of State.

(b) On pages 40-41 of the FSOR the Department summarized a comment from Commentator 19 that stated the Department is "required" to and "must" conduct its cost/benefit analysis pursuant to an August 1, 1999, Department document titled "Procedure for Reviewing Maximum Contaminant Levels (MCLs) for Possible Revision" and included two partial quotes from the document but did not submit the actual document when the rulemaking file was submitted to the Office of Administrative Law (OAL) for review. A copy of that document is attached and

incorporated by reference into this Addendum not as a document relied upon, but solely for the purpose of responding to the comment.

(c) Page 44 of the FSOR contains the Department's response to Commentator 69.

**Comment Summary:** Commentator 69 noted that the Department's detection limit of 4ppb "does not reflect the current detection technology and constructs an outdated and artificial technological barrier to establishing a perchlorate MCL below four parts per billion."

**Revised Department Response:** The Department's proposed MCL is 6 ppb, which is identical to the public health goal (PHG). Setting an MCL lower than the PHG cannot be legally justified at this time. Therefore, since an MCL lower than 6 ppb is not attainable at this time, the proposed detection limit for reporting (DLR) of 4ppb is adequate to determine whether the concentration of perchlorate in the drinking water exceeds the proposed MCL of 6ppb and is sufficiently lower than the MCL to provide the water system and Department knowledge of perchlorate's presence in drinking water in a timely manner.

(d) On page 53 of the FSOR in the last sentence of the Department's summary of commentators' comments pertaining to Section 64432.3(d), a typographical error is noted. The word "bases" should be "basis."

5. Tab 5, which contains the hearing transcript, has a separate sheet of paper that states "Additional comments for those commentators Dr Borack, Ms Jahigirdar, Ms Nurse, Ms Sharp and Dr Soloman can be found with written comments entered into the rule making record at Tab \_\_\_\_." The comments referenced are located in Tab 7.