

**Final Statement of Reasons**  
**Primary Maximum Contaminant Level for Methyl tert-Butyl Ether**  
**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 (EPA) under the Safe Drinking Water Act (42 U.S.C. 300f et seq.) as well as by the California Department of Health Services (Department) under the California Safe Drinking Act (Sections 4040.1 and 116300-116750, 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, also known as maximum contaminant levels (MCLs). Primary MCLs are based on health protection, technical feasibility, and costs. Secondary MCLs are based on consumer acceptance, using parameters such as odor, taste, and appearance as measures of acceptability. The water supplier must notify the Department and the public when a primary or secondary MCL has been violated and take appropriate action. Public water systems must also sample for a number of “unregulated” chemicals, as set forth in regulation.

Pursuant to section 116610(c) of the H&S Code, the Department is mandated to adopt a primary MCL for MTBE. To accomplish this, the Department proposes the following amendments to chapter 15, division 4, title 22 of the California Code of Regulations:

- To amend section 64444, article 5.5, by adding methyl-*tert*-butyl ether (MTBE) with a primary MCL to Table 64444-A, the list of primary MCLs;
- To amend section 64445, article 5.5, by repealing obsolete dates, and providing for the grandfathering of MTBE data for sources meeting the nonvulnerability criteria in the existing regulations;

- To amend section 64445.1, article 5.5, by adding MTBE with a detection level for purposes of reporting (DLR) to Table 64445.1-A, the list of DLRs for regulated organic chemicals;
- To amend section 64447.4, article 12, by adding MTBE with a best available technology (BAT) to Table 64447.4-B, the list of BATs for organic chemicals; and
- To amend section 64450, article 17, by removing MTBE from Table 64450-B, the list of unregulated chemicals for which monitoring is required for nontransient-noncommunity water systems;
- To amend section 64468.2, article 19, by adding notification language for an MTBE primary MCL violation.

In addition, the Department proposes to amend section 64447.2, article 12, by adding fluoride with a best available technology (BAT) to Table 64447.2-A, the list of BATs for inorganic chemicals.

The net effect would be that:

- Community and nontransient-noncommunity water systems would be required to monitor and comply with a primary MCL of 0.013 mg/L for MTBE.
- BATS would be designated for use by any community or nontransient-noncommunity water system not in compliance with the primary MCLs for fluoride or MTBE.
- Nontransient-noncommunity water systems would no longer be required to monitor for MTBE as an unregulated chemical.

None of the proposed amendments would affect California's primacy status, because the net affect of these amendments is that the state's regulation would be more stringent than the federal, which is allowed.

In addition to the above amendments, the Health and Safety Code citations in the authority/reference NOTES for sections 64444, 64445.1 and 64447.4 would be amended

for consistency with the relevant sections of the Health and Safety code as currently codified.

The following paragraphs describe and explain the proposed amendments.

## **Article 5.5. Primary Standards -- Organic Chemicals**

### **Section 64444. General Requirements**

The purpose of this section is to list the chemicals for which primary maximum contaminant levels (MCLs) have been established to protect the health of consumers of drinking water served by community and nontransient-noncommunity water systems. Methyl tert-butyl ether (MTBE) would be added to this list (Table 64444-A) with a primary MCL of 0.013 mg/L.

MTBE is a colorless, liquid hydrocarbon that has been used as an octane booster in gasoline since the 1970s. Highly mobile in soils through which it rapidly migrates to groundwater, very soluble in water, and extremely slow to biodegrade (or possibly non biodegradable), MTBE has been found in shallow groundwater throughout the U.S. ("Public Health Goal for Methyl Tertiary Butyl Ether (MTBE) in Drinking Water", March 1999). Due to concerns regarding possible MTBE contamination of drinking water supplies in California, the Department added MTBE to the list of unregulated chemicals (22 CCR Section 64450) for which community and nontransient-noncommunity water systems are required to monitor in order to collect solid occurrence data for MTBE in drinking water sources. Data collected prior to and since the effective date of the requirement (February 13, 1997) by regional water quality control boards and drinking water utilities indicates there is some groundwater and surface water contamination in California. As of February, 1999, 67 of the 4,889 drinking water sources tested for MTBE (1.4%) had detections ("Summary of Sampling of Public Drinking Water Systems for Methyl tertiary Butyl Ether (MTBE)", February 26, 1999). Many of the sources with detections have taken followup samples and, in some cases, levels have significantly decreased over time. Levels in the 41 ground water sources with

MTBE detections ranged from 0.0005 to 0.300 mg/L; sources exceeding 0.013 mg/L have been removed from service. In the 26 surface water sources with MTBE detections, levels ranged from 0.00035 to 0.015 mg/L; most of these findings were at the untreated drinking water intakes from reservoirs, not in the treated drinking water being distributed to the public.

Pursuant to section 116610 (d) of the Health and Safety Code, the Department adopted a secondary MCL of 0.005 mg/L for MTBE, based on the aesthetics of its odor; the MCL took effect on January 7, 1999.

In 1991, the Pesticide and Environmental Toxicology Section which was then in the Department, but is now in Cal/EPA's Office of Environmental Health Hazard Assessment (OEHHA) developed an action level of 0.035 mg/L for MTBE. At that time, there was very little known about its occurrence. Action levels provide non-regulatory guidance to the Department's Drinking Water Program, County Health Departments, utilities and the public about the significance of findings in drinking water of chemicals without drinking water standards.

In December 1996, EPA released a draft health advisory of 70 ug/L, based on kidney and liver effects observed in laboratory animal experiments for MTBE ("Methyl-t-Butyl Ether [MTBE] Drinking Water Health Advisory, Health and Ecological Criteria Division, Office of Science and Technology, Office of Water US EPA, Washington, D.C. 20460).

In June 1998, OEHHA released a draft document, "Public Health Goal for Methyl Tertiary Butyl Ether (MTBE) in Drinking Water", proposing a public health goal (PHG) of 0.014 mg/L. PHGs are strictly health-based standards adopted by OEHHA pursuant to section 116365 of the Health and Safety Code. The MTBE PHG is based on carcinogenic effects observed in experimental animals. Specifically, studies have provided evidence for the carcinogenicity of MTBE at multiple sites in both sexes of the rat and mouse. The PHG assumes a de minimis theoretical excess individual cancer risk level of  $10^{-6}$  from exposure to MTBE over a lifetime drinking three liters of water a day.

OEHHA used 3 liters rather than the more customary 2 liters of water to cover the impacts of exposure to MTBE via routes other than oral ingestion, i.e., dermal and inhalation. Subsequently, after public comment, OEHHA finalized the draft document (“Public Health Goal for Methyl Tertiary Butyl Ether [MTBE] in Drinking Water”, March, 1999) and adopted a PHG of 0.013 mg/L in March, 1999.

Pursuant to section 116365(a) and (b) of the H&S Code, the Department is charged with adopting 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 MTBE should be proposed at the PHG level of 0.013 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 MTBE, monitoring costs, available treatment technologies for removal to the proposed MCL level, and estimated fiscal impact on California drinking water utilities to comply with the proposed standard.

Monitoring for MTBE is feasible, both in terms of methods available and analytical detection levels and cost to the water systems. There are two analytical methods currently used to test for MTBE under existing monitoring requirements: EPA methods 502.2 and 524.2. Both methods are also used to test for a large number of regulated volatile organic chemicals, pursuant to federal and state regulatory requirements (40 CFR section 141.24(e) and CCR title 22, chapter 15, section 64415(a)). The proposed regulation would allow water systems to coordinate the MTBE monitoring with their

other compliance monitoring to minimize costs. However, approximately 90% of the sources for community systems serving 200 or more connections and 99% of the sources for community systems serving less than 200 connections could possibly need three quarters of monitoring in addition to that conducted under existing requirements; the reason is that the proposed regulation requires four quarters of monitoring the first year whereas the existing regulations (secondary MCL monitoring) require one sample per year at the most. This would involve approximately \$400 in incremental monitoring costs per community water system source for initial monitoring for the primary MCL for MTBE (see Fiscal Impact Analysis for this proposed regulation).

In order to determine the feasibility of compliance with the MCL, the Department reviewed occurrence data collected as of February 26, 1999; 41% of the community and nontransient-noncommunity water sources had been monitored with a detection rate of 1.4%. Since, to a great extent, initial monitoring under the unregulated chemical monitoring requirements has been focused on the most vulnerable sources, the data suggest that the occurrence rate for 100% of California water systems is even lower. Also, the Department determined that no active drinking water sources would be out of compliance with the proposed MCL of 0.013 mg/L. The few sources that would have been removed from service. Therefore, there are currently no identified drinking water sources that a drinking water system would need to treat in order to come into compliance with the proposed MCL, and since most vulnerable sources have already been tested, the Department does not currently anticipate any that would need treatment. Hence, there is no consequent fiscal impact related to treatment feasibility. As noted below in the discussion on best available technology (BAT) for MTBE, if a source needed to be treated, the identified BAT is a technically feasible approach, but MTBE removal would be somewhat more expensive than that for most other volatile organic chemicals, although still within a feasible cost range.

Given no national standard as a reference point, the OEHHA PHG of 0.013 mg/L, and the feasibility of monitoring and treatment costs, the Department proposes that the MCL for MTBE be set at the level of the PHG, 0.013 mg/L.

**Section 64445. Initial Sampling – organic chemicals**

The purpose of this section is to establish the monitoring and compliance requirements for organic chemicals in drinking water.

Subsection (b) would be amended to enable water systems to coordinate their compliance monitoring for chemicals added to Table 64444-A with existing compliance monitoring schedules in order to minimize monitoring costs.

Subsection (e) would also be amended to enable water systems to coordinate their compliance monitoring for chemicals added to Table 64444-A with existing compliance monitoring schedules for their standby sources in order to minimize monitoring costs.

The dates in subsection (g) would be repealed because they are obsolete; referring to the use of data collected prior to January 1993 for satisfying the initial monitoring requirements in this section for chemical MCLs adopted in 1994. At this point, data collected prior to that date would not be acceptable for satisfying the initial monitoring requirements for those chemicals, since all initial monitoring for those was to have been conducted by January 1996. If a system has not yet complied with the initial monitoring requirements in this section for the MCLs adopted in 1994, it would need to conduct four quarters of monitoring to obtain current occurrence data. For any chemicals added subsequently (such as the proposed addition of MTBE), data collected prior to January 1993 would be out of date. The proposed revision to this subsection would specifically address MTBE, providing that data collected subsequent to January 1, 1998 along with a designation as a nonvulnerable source, could be used to satisfy the initial requirement for four quarters of monitoring, i.e., sources might be able to comply with the initial monitoring requirement by grandfathering in data if the sources are nonvulnerable pursuant to the existing regulations.

**Section 64445.1. Repeat sampling**

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

Table 64445.1-A would be amended to add a DLR for MTBE. MTBE can be reliably detected by approved analytical laboratories at levels of 0.001 mg/L. However, MTBE is a solvent in several laboratory methods for other chemicals and hence, there is a very slight potential for cross-contamination. For this reason, the Department is concerned that a DLR of 0.001 mg/L might result in occasional false positives. Since the adoption of the unregulated chemical monitoring regulation for MTBE in February 1997, the Department has been using an unofficial DLR of 0.005 mg/L, although laboratories have been reporting findings as low as 0.0005 mg/L. It appears that most laboratories are confident that their quality assurance/quality control procedures preclude any sample cross-contamination and they are comfortable reporting below the 0.005 mg/L. However, in order to reliably quantitate at levels of 0.002 mg/L and below, laboratories would most likely need to resort to other than the commonly used methods for volatile organic chemical scans---502.2 and 524.2. A change in methods would result in an increase in analytical costs. Also, there might be a reduction in reported data because laboratories currently include MTBE in their reporting whenever they run 502.2 or 524.2 for other organic chemical monitoring.

Therefore, the Department believes that it would be prudent to establish a DLR of 0.003 mg/L to preclude the incidence of “false positives” and minimize costs, yet still collect as much data as possible on MTBE occurrence.

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

### **Section 64447. Best available technologies (BAT) – 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 and in conformance with federal requirements.

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." Activated alumina has been demonstrated in a number of different full-scale applications to be both efficient and cost-effective for the removal of fluoride and is recommended by EPA. Therefore, the Department proposes activated alumina as the BAT for fluoride.

#### **Section 64447.4. Best Available Technologies (BATs) – Organic chemicals**

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

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."

Although numerous technologies have been evaluated on a theoretical or bench-scale basis for the removal of MTBE from water, including air stripping, granular activated carbon (GAC), advanced oxidation processes (AOPs), membrane separation, resin adsorption, and biological treatment, very limited data exists on "full-scale field applications" of the technologies. The only full-scale field applications noted in the literature are air stripping systems (Malcolm Pirnie, "Estimates of Annual Costs to Remove MTBE from Water for Potable Uses", 1997). Full-scale air stripping systems have demonstrated MTBE effluent concentrations of less than 5 ppb, with average influent concentrations of 90 ppb. The literature suggests that GAC and AOPs are also capable of removing MTBE from water, but full-scale projects have not been documented (Brown et al., "A Review of Treatment Technologies for Methyl *tertiary* Butyl Ether (MtBE) in Drinking Water", Komex H2O Science, Huntington Beach, CA 92649-1102, 1997).

Until the effectiveness of another technology (GAC, AOPs, or others) is demonstrated in a full-scale field application, the Department is limited to identifying air stripping, given its proven full-scale field applications, as the BAT.

Treatment costs will vary significantly depending upon many site-specific parameters including water temperature, influent MTBE concentration, presence of other organic compounds, general water chemistry, and treatment system capacity (Malcolm Pirnie 1997). Air stripping of MTBE is less efficient than air stripping of other VOCs, such as benzene and TCE, and is likely to be more costly (Brown et al. 1997). Typical design parameters for MTBE treatment require an approximate air to water ratio of 200:1 (Malcolm Pirnie 1997) vs. the more common ratio of 50:1 for VOCs such as benzene. In addition, treatment of the off-gas stream may be necessary, further increasing the overall cost of treatment. The Malcolm Pirnie report cites annual combined capital/operations and maintenance costs for reducing 700 ppb MTBE to 10 ppb for flows of 600 gallons and 6000 gallons per minute: \$0.47 and \$0.21 per thousand gallons, respectively. With off-gas treatment, costs would rise to \$0.83 and 0.55 per 1000 gallons, respectively.

## **Article 17. Special Monitoring Requirement for Unregulated Organic 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 amend this section by removing MTBE completely from the list of chemicals to be monitored in Table 64450-B. The reason for this amendment is that the proposed regulation requires that all community and nontransient-noncommunity water systems monitor for MTBE to determine compliance with the proposed primary MCL; therefore, no other monitoring would be necessary.

## **Article 19. Notification of the Department and Water Consumers**

### **Section 64468.2. Health Effects language – volatile organic chemicals**

The purpose of this section is to provide language to be used in communicating with the public when an MCL for a volatile organic chemical has been violated; the language is intended to inform the public about the possible health effects associated with the chemical. The proposed regulation would amend this section by adding (in alphabetical order) the language for an MTBE MCL violation [subsection (1)]. Subsequent subsections would be relettered accordingly. This language is proposed for conformance with the provision of language for other chemicals with primary MCLs to be included in the notice sent to the public if the water system violates the MCL. 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.

**Appendix I**  
**List of Comments**  
**Public Comment Period Ending November 1, 1999**  
**R-8-99**

<i>Reference #</i>	<i>Commentator Name and Representation</i>
1	Nira Yamachika, Director of Water Quality Orange County Water District
2	Dan Smith, Manager of Regulatory Affairs Association of California Water Agencies
3	Andrew DeGraca, Water Quality Bureau Public Utilities Commission, City and County of San Francisco
4	Gilbert M. Borboa, Jr., Utilities Manager City of Santa Monica
5	Dennis J. Bitter, Industrial Account Manager Calgon Carbon Corporation
6	Gene Livingston, Attorneys for the Oxygenated Fuels Association John Kneiss, Director, Science Policy & Research Oxygenated Fuels Association, Inc.

## Response to Public Comments on R-8-99

No request for a public hearing pursuant to Government Code 11346.8 was received. The Department had solicited written comments only.

The responses to public comments on R-8-99 are organized under the following headings:

- MCL
- Derivation of public health goal (PHG)
- Legality of PHG
- Reporting level
- BAT for MTBE
- Monitoring frequency
- Sampling of sources
- Grandparenting of data
- CEQA applicability
- Fiscal impact analysis and impact on businesses
- Placement of fluoride BAT proposal in this package
- Miscellaneous comments

### **MCL**

Comments 3 and 4 support the proposed MCL of 13 ppb. Comment 6 stated that the Department should not have based the MCL on the PHG and that the MCL “should be set at no less than 50 ppb”. The Department is required by Health and Safety Code section 116365 to use the PHG in its development of the MCL and to set the MCL as close as is feasible to the PHG. This comment also questions the requirement for monitoring by utilities for a “chemical that will no longer be commercially available in the State”. Unfortunately, extensive experience has demonstrated that the cessation of a chemical’s use does not eliminate it from the environment; although DBCP was banned in 1977 in California, it can still be found in many aquifers. Protection of public health necessitates monitoring for such chemicals for an extended period until it is certain they will no longer be found.

### **Derivation of PHG**

Comment 6 made several statements related to the scientific validity of the PHG derivation. Since Cal/EPA adopted the PHG, the PHG was not the subject of the proposed regulatory action. The Department was utilizing the PHG as mandated by Health and Safety Code section 116365(b)(1) and, therefore, the comments are beyond the scope of this regulatory proposal and no response is necessary.

Comment 1 stated that the Department should provide an “evaluation and assessment on the use of 3 liters per day” in deriving PHGs and also requested a copy of the Department’s assessment of the MTBE PHG. Again, this comment and the request are beyond the scope of the regulatory proposal and no response is necessary.

### **Legality of PHG**

Commentator 6 states in I.A. (p. 5) that “The PHG for MTBE is an Invalid Regulation Because It was Adopted Without Complying with the Administrative Procedure Act (APA).” The commentator asserts that the PHG for MTBE was subject to the APA, but was not adopted pursuant to the APA. Thus, the comment claims the PHG is invalid as unlawful and cannot serve as the basis for the maximum contaminant level (MCL). In support of this assertion, the commentator highlights some of the various challenges to PHG adoption process and the resolution of these challenges and their supposed impact on the ultimate status of PHGs in relation to the APA. The commentator concludes by again asserting that the PHG for MTBE is invalid and cannot form the basis of the MCL.

The recitation by the commentator of the various challenges to the process for adopting the PHG for MTBE was incomplete. Without specifically responding to each representation and characterization of the events by the commentator, DHS notes the following developments as the critical and controlling events.

- A lawsuit was filed in Sacramento County Superior Court challenging the adoption of the PHG for MTBE on the identical grounds asserted by the commentator here and urging its invalidation. Superior Court Judge James T. Ford specifically rejected all of the arguments advanced in that case and ruled that PHGs are not “regulations” within the meaning of the APA and, thus, are not subject to review by the Office of Administrative Law (OAL). The OAL issued an advisory opinion that the PHG for MTBE was a regulation and, accordingly, was subject to APA procedures under the auspices of OAL.
- Since that time there have been two (2) key events. First of all, SB 635 (Sher) was chaptered and enacted into law. Commentator’s interesting explanation of the impact of this bill notwithstanding, the essence of SB 635 was to confirm that PHGs are not regulations, never were regulations, and thus are not, and never were, subject to the APA. Finally in this regard, if there is any doubt whatsoever about this issue it was resolved when the same interested parties returned to Sacramento County Superior Court and advanced the same arguments there, as here, regarding the import of SB 635. Again, Judge Ford rejected all of the arguments put forward by petitioners regarding the effect of SB 635 on this matter, confirming the state of the existing law that PHGs are not regulations and are not subject to the APA.

In I.B. (p. 5), commentator 6 stated that “The PHG for MTBE was Adopted Without Complying with Health & Safety Code 57004, Requiring External Peer Review.” The essence of the comment on this subject is again that PHGs are regulations and, as such, are subject to the peer review provisions of Health and Safety Code section 57004. According to the comment, the PHG for MTBE was not adopted in compliance with section 57004 and, thus, cannot serve as the basis for the MCL. In support of this interpretation, the commentator points to the peer review provisions of the federal Safe Drinking Water Act, the statutory scheme being implemented by California through the California Safe Drinking Water Act.

All of the arguments made here were heard and rejected by the Sacramento County superior Court on two (2) separate occasions. Quite simply, section 57004 only applies to “regulations” within the meaning of the APA (and certain policies adopted by the State Water Resources Control Board that are not pertinent to this matter). Again, as outlined above, since PHGs are not regulations, this provision does not apply to the adoption of PHGs.

In I.C. (p. 12), commentator 6 states that “The PHG for MTBE is Inconsistent with the Statute it is to Interpret, Implement or Make Specific.” In I.D., commentator 6 states that “The PHG Report Fails to Demonstrate the Necessity for a MCL for MTBE at 13 ppb Based on Carcinogenicity as a Health Outcome.” Since the PHG and the PHG report are outside the scope of the regulation, no response to these comments is necessary.

### **Reporting level**

Commentator 3 supports the proposed reporting level of 3 ppb. Commentator 1 compared the proposed detection level for purposes of reporting (DLR) for MTBE (3 ppb) to that for methylene chlorine (0.5 ppb) and suggested they should be the same, either both 3 or both 0.5 ppb. Pursuant to the U.S. Environmental Protection Agency (EPA), all DLRs for volatile organic chemicals with both state and federal MCLs (such as methylene chloride) were adopted at 0.5 ppb. At the time this regulation was proposed, EPA had not set a DLR for MTBE; consequently, the Department evaluated its data from the Sanitation and Radiation Laboratory Branch, reviewed commercial laboratory capabilities in California, and considered the fact that a very low reporting level would preclude the use of EPA method 502.2, which is the most commonly used method for volatile chemicals and is less expensive than the more sensitive method 525.2. The Department determined that 3 ppb was the most appropriate level in terms of commercial laboratory capabilities, sensitivity, and cost. Subsequently, in September 1999, with the adoption of the unregulated chemical monitoring rule, EPA adopted a reporting level of 5 ppb.

### **BAT for MTBE**

Commentators 2 and 3 agreed that based on full-scale tests, air stripping is probably the best BAT at this time, but stated that it is not ideal and research on additional treatment methods should be progressed and funded appropriately. The Department agrees

Commentator 6 (II.B., p. 17) states that the Department has failed to give sufficient consideration to technologies other than air stripping; specifically, granular activated carbon (GAC), advanced oxidation processes (AOPs), and biodegradation. The Department has in fact given significant consideration to each of these technologies, and a few others. The Statement of Reasons acknowledges that these technologies may be capable of removing MTBE from water, but notes that none of these technologies has been proven effective under “full-scale field applications,” a criteria for BAT specified in section 116370 of the H&S Code.

Commentator 5 requested that granular activated carbon (GAC) be added as a BAT, and provided documentation intended to support that proposal. Section 116370 of the H&S Code states that the Department's finding of BAT shall take into consideration technologies that have "been proven effective under full-scale field applications." The Department is aware of GAC and has reviewed many bench scale and laboratory studies, including those provided by the commentator, that indicate GAC's potential for removing MTBE from water. However, the Department is not aware of any effective, full-scale field applications of GAC. Although the commentator provided three cases as examples of full-scale field applications, one of these examples (Citizens Water) was only a bench scale study, and another (Connecticut Water) was treating water with initial MTBE concentrations less than the proposed MCL of 10 ppb. In the third case (Rockaway Township), the utility found GAC alone to be too expensive, so they added an air stripping system. As a result of the "excellent performance of the aeration system," the GAC system was taken off-line. The Department does not believe any of these examples demonstrate GAC's effectiveness under full-scale field applications.

Commentator 1 asked whether or not BAT treatment should be capable of reducing the MTBE concentration to 5 ppb to meet the secondary MCL for taste and odor. Section 116370 of the H&S Code only requires that BATs be determined for primary MCLs, not secondary MCLs.

Commentator 1 asked whether or not the Department included the costs of land purchase in its evaluation of BAT. The Department assumes that any treatment technology will require land, and it is not believed that any one of the technologies will require significantly more or less land than the others. Additionally, land costs will vary significantly depending upon location, making the costs very difficult, if not impossible to estimate. Therefore, for BAT evaluation purposes, the cost of land was not considered.

Commentators 2 and 3, noting that the Department cited cost estimates for 600 gpm and 6,000 gpm systems for the proposed BAT for MTBE, suggested that the regulatory process give some consideration to costs incurred by small systems (60 gpm). These commentators also requested that the Department provide the criteria used to determine that the "implementation of the recommended BAT is economically feasible". The process of "adopting a finding of the best available technology" (Health and Safety Code [H&S] section 116370) mandates only that the Department "take into consideration the costs and benefits.." of the technology under consideration and that it be "proven effective under full-scale field applications". There is no requirement for an economic feasibility determination for implementation of the regulation, as there is in H&S section 116365(b)(3) for the adoption of primary MCLs. Therefore, none was done. However, in the Statement of Reasons, the Department did consider costs, as well as benefits associated with those costs, by ascertaining that the BAT was not only effective under full-scale applications as required by the statute, but that it could achieve the benefit of removal to levels below the proposed MCL.

However in mandating that the Department "adopt a finding of the best available technology"

**BAT for fluoride**

Commentators 2 and 3 stated that the regulations should be clarified to differentiate between naturally occurring fluoride and fluoride added for treatment. The Department will restrict its response to section 64447.2, since it is the only section addressing fluoride that is included in this proposed regulatory action. It is unnecessary to specify that the fluoride BAT is applicable only to natural fluoride for two reasons. First, that section states that the technologies are for use in complying with MCLs and the fluoride MCL is applicable ONLY to naturally occurring fluoride. Second, it would not make any sense to be removing fluoride before the water enters the distribution system when the fluoride will be monitored in the distribution system to ensure that the proper range is delivered to the consumer. If and when the Department revises the inorganic chemical MCL section, it will endeavor to further clarify the applicability of the fluoride MCL. However, no such clarification is necessary in section 64447.2.

**Monitoring frequency**

Commentator 1 stated that the monitoring frequencies of 4 initial quarters for active sources and one sample every 3 years for standby sources might not be sufficient given MTBE's characteristics and pervasiveness; the commentator suggested that monitoring be a function of vulnerability and that standby sources be monitored more frequently. The Department is aware of MTBE's characteristics. The commentator expresses concern related to monitoring frequently enough to detect MTBE plumes. The intent of source monitoring is not to detect plumes, but to protect public health. The existing monitoring frequencies for organic chemicals that apply to MTBE provide adequate health protection since MTBE poses risks from chronic exposure, not short-term. Department District Field Offices do review the vulnerability of sources in their determination of reduced monitoring schedules (i.e., those less than 4 quarters/year). Monitoring more than 4 quarters/year would be burdensome with no commensurate public health benefit.

**Sampling of sources**

Commentators 2 and 3 expressed confusion regarding the Department's definition of a "vulnerable" source and stated that any source is potentially vulnerable. The Department agrees that all sources should be carefully assessed before designating a source nonvulnerable and is quite aware that vulnerability is not limited to sources located in urban areas. Although there are certain to be some yet unsampled sources in which MTBE will be found, the Department believes, based on District Field Office assessments, that most sources likely to be contaminated have already been identified and sampled.

Commentator 6 (attachment entitled *Comments on California's Proposed Maximum Contaminant Level (MCL) for MTBE*, p. 4) stated that the Department should reconsider its proposal to not extend the monitoring requirements for MTBE to nontransient-noncommunity water systems. The commentator has misunderstood the proposed regulation; the proposed MCL and its associated monitoring does apply to this category of water system.

### **Grandparenting of data**

Commentators 2 and 3 supported the use of grandparented data, but stated that the acceptable data to be grandparented in should include data back to January 1, 1996. The Department set the January 1, 1998 date to ensure that data used for this purpose was collected within the context of the reporting level set by the Department at that time, e.g., 3 ppb; the 3 ppb replaced the previous reporting level of 5 ppb. Thus, a “non-detect” result prior to January 1998 could be a detect subsequent to that date. (Note that commentator 3 referenced section 64444 incorrectly; the intended reference is 64445.)

Commentator 3 stated that the regulation “should specify that either 3 years of annual monitoring or 1 year of quarterly monitoring is adequate for a system to begin annual monitoring”. The existing and proposed regulations already specify this. Proposed section 64445(g) provides that a single sample with no detection may satisfy the 4-quarter requirement and allow for annual monitoring; therefore, 3 annual samples would more than suffice. Section 64445.1(b)(1) allows annual monitoring after 4 quarters of monitoring with no detection.

### **CEQA applicability**

Commentator 6 (III, p. 23) stated that “The DHS Has Failed to Comply with the Requirements of the California Environmental Quality Act.” There are potentially two steps in the CEQA process: First, a determination must be made as to whether CEQA applies; second, if a positive determination is made, further analysis is required and an environmental impact report (EIR) may need to be prepared. In 1990, the Department, on the advice of counsel, made the determination that all MCLs are categorically exempt from CEQA except in the instance in which there is a relaxation of an existing MCL. Given that determination and the fact that the MTBE primary MCL would not result in a relaxation of an existing MCL, or present an unusual circumstance, the MCL is exempt from CEQA. Therefore, CEQA documentation requirements including the “fair argument” test do not apply and no further CEQA-related environmental evaluation or activities are necessary.

### **Fiscal impact analysis and impact on businesses**

Commentators 2 and 3 made a number of statements related to the fiscal impact analysis: Removal of sources from service was due to lack of a regulatory standard; analysis was based on a conclusion that no sources of drinking water would require treatment because impacted sources have been removed from service; there could be contamination at other sites now and in the future requiring treatment; it is unfair to evaluate the sources requiring treatment the same as a naturally occurring contaminant; and limited sampling has been done to date. Addressing these statements in order: The Department had previously adopted a more stringent secondary MCL of 5 ppb for MTBE which was applicable to all community water systems; therefore, there already was an existing regulatory standard for that category of systems that was more stringent. The Department is required to develop an incremental cost analysis based on existing conditions and available data at the time the regulation package is compiled. At that time, there were no

known sources that would have been out of compliance with the proposed MCL. And, in fact, given that a more stringent standard already existed for community water systems, the only incremental costs that could accrue as the result of treatment related to this regulatory action would be those for nontransient-noncommunity (NTNC) water systems. Yes, the Department is aware that there may be affected NTNC systems identified in the future. However, the available data did not suggest that there would be a significant number, given that only a little over 1% of sampled vulnerable sources have even had detects, nor did the data provide an adequate basis for making any kind of projection. The commentator refers to “limited sampling”; at the time the regulation package was compiled, 41% of the sources had been sampled; these were sources assessed to be vulnerable to MTBE and the detect rate was quite low, as noted above. The Department does not consider this a “limited sampling” since vulnerable sources were targeted.

Commentator 2 also requested a copy of the Fiscal Impact Analysis and that has been provided.

Commentator 6 (II.A., p 17) stated that the Department suggested that “because only a small number of water sources have MTBE concentrations above the proposed MCL (i.e., less than 1.4% of water sources), the expedient method of compliance is to abandon the water source.” The commentator was incorrect: The Department stated that 1.4% had “detections”, not exceedances; and the Department did not suggest that abandonment was expedient—it merely observed that sources exceeding the proposed MCL had been removed from service.

Commentator 6 (II.C., p. 19) stated that the Department did not consider the economic feasibility of compliance with the proposed MCL pursuant to Health and Safety Code section 116365(b)(3). The Department is required to develop an incremental cost analysis based on existing conditions and available data at the time the regulation package is compiled. At that time, not only was there a more stringent secondary MCL of 5 ppb with which all community water systems are required to comply, but also there were no known active drinking water sources for nontransient-noncommunity water systems that would be out of compliance with the proposed MCL. In addition, given the low rate of detections (i.e., 1.4%, most of which were below the required reporting level of 3 ppb), there was little basis for projection of noncompliance with the MCL. The statute specifies using best available technology to determine cost per customer and aggregate cost of compliance; hence, this requirement is specific to treatment and does not include monitoring costs. The commentator makes reference to not addressing the cost of well replacement; however, again, there was no need to do so since data did not indicate that any active sources would exceed the proposed MCL. The commentator states that both the Local Mandate Determination and the Business Impact are in error for the same reason; the Department disagrees for the reasons given above.

Commentator 6 (attachment, referred to on p. 20 of comments) provided a report from Malcolm Pirnie prepared in response to the proposed regulation and stated that it “discusses the more realistic costs of compliance with the proposed MCL”. The report addresses both monitoring costs and treatment costs. The Malcolm Pirnie report details

several minor differences in the factors used for estimating costs, but these do not account for the major differences in the bottom lines:

<i>Cost element</i>	<i>Department</i>	<i>Malcolm Pirnie</i>
Monitoring costs	\$4,541,200	\$8,119,500
Treatment costs	0	\$2,146,760 to \$2,593,520

The difference in monitoring costs is basically accounted for by the fact that the Department used an analytical unit cost of \$133/sample, while Malcolm Pirnie used a unit cost of \$250/sample (almost double). The Department's unit cost was an average from a survey of three commercial laboratories (costs for method 502.2 ranged from \$100 to \$150/sample); reasonability was confirmed by the Department's Sanitation and Radiation Laboratory Branch at that time and again confirmed at the time of responding to these comments. The \$133/sample was also used for the MTBE secondary MCL cost estimate. The Malcolm Pirnie unit cost includes a \$50 collection fee per sample and the analytical method is unspecified; perhaps they used the 524.2 method which is more costly than that used by most water systems in California for volatile organic chemical analysis. The Department did not add in a collection fee because it assumed that generally water systems would opt to collect samples themselves to minimize costs and coordinate collection with that for other compliance monitoring. If the Department were to add in the \$50 collection fee, the resulting estimate would be \$6,248,400, representing a 38% increase over its initial estimate (\$1,707,200 difference). The Department believes that the actual cost to monitor for MTBE is somewhat less than the \$6.25 million due to coordinated sample collection.

The difference between the Department's and Malcolm Pirnie's (MP) estimate for treatment costs is that MP calculated treatment costs for sources it stated had "known" exceedances and for projected exceedances, based on the "known" exceedances. The Department had determined at the time it calculated regulation costs, that there were no known exceedances of the proposed MCL in active sources. Unfortunately, MP has several misconceptions: First, for community water system sources, the more stringent secondary MCL of 5 ppb would be exceeded first and require treatment; second, wells designated "inactive" in the Department's database are no longer permitted drinking water sources; third, wells designated "standby" do not require treatment; fourth, the list of surface water samples designated "raw", "effluent" and "treated" does not provide sufficient detail to determine exactly what these sources are and whether treatment would actually be needed; and, finally, the two active sources purported to exceed the proposed MCL may be blended with other sources to achieve compliance if they actually do exceed the MCL. Since MP does not provide specific data on these sources, there is no way to check on actual compliance status and system type. As noted above, only nontransient-noncommunity water systems with sources exceeding the 13 ppb would be impacted by the proposed MCL, because community water systems are subject to the more stringent secondary MCL of 5 ppb.

Since MP assumes that all the sources they listed will require treatment and that the percentage of sampled sources they represent (15%) can be used as a factor to project

exceedances and required treatment for unsampled sources, the facts above indicate that this cost analysis has no sound basis.

Commentator 6 (II.D., p. 21) states that the Department “must reconcile its current position with regard to economic feasibility with information it provided to the Legislature in 1995 in connection with the Legislature’s consideration of SB 1307” and quotes two passages along with a passage from the Proposed Conference Report No. 1. These statements make reference to a proposed legislative action totally unrelated to this proposed regulatory action. The commentator has conveniently forgotten that the Department is mandated to set new MCLs as close as is feasible to the PHGs and the fact that there were fiscal concerns expressed in 1995 and 1996 related to possible changes in existing MCLs resulting from establishing PHGs is irrelevant. The Department has adequately demonstrated that the fiscal impact of the proposed MCL is not significant.

Commentator 6 (II.D., p. 21) stated that the Department focused only on drinking water systems in its Business Impact statement. The Department’s understanding of the mandate in Government Code section 11346.3(a) is that the community directly affected by the proposed regulation (i.e., water systems) is the appropriate focus for this analysis. It has taken this approach with all previous regulation analyses.

#### **Placement of fluoride BAT proposal in this package**

Commentators 1, 2 and 3 recommended that the Department use separate regulation packages when addressing “distinct and unrelated issues”. Since BAT is essentially an identification of approved technology, rather than a requirement to be met by the drinking water systems, the Department did not anticipate that the inclusion of the fluoride BAT in this package would pose a problem. However, the Department will endeavor to separate such proposals in the future.

#### **Miscellaneous comments**

Commentator 3 made several comments addressing sections in the article on fluoridation; no response is necessary since none of the sections were included in this proposed regulatory action.

**Addendum to the Final Statement of Reasons  
for the Primary MCL for MTBE**

The following are provided to clarify statements made on the referenced pages of the Final Statement of Reasons:

Page 5 The document "Public Health Goal for Methyl Tertiary Butyl Ether (MTBE) in Drinking Water", dated March 1999, was used as the basis for the proposed MCL. The June 1998 draft document is mentioned only to provide historical background and was not a document relied upon.

Page 13 Commentator 6 stated that the Department "...should take into account duration of exposure so as to conform to actual situations of human exposure" and referenced the anticipated phasing out of MTBE use in California, the point being that the OEHHA risk assessment was based on a 70 year lifetime of exposure. The Department's response on page 13 to the effect that "...extensive experience has demonstrated that the cessation of a chemical's use does not eliminate it from the environment..." was intended to address this comment as well as that related to monitoring summarized on page 13 in the same paragraph.

Page 14 The reference to MTBE in the response that mentions the lawsuit filed in Sacramento County Superior Court is a typo; MTBE in the second and also second to last line in that paragraph should be replaced with DEHP.

Page 14 Copies of the two court case decisions mentioned in the response to comments and the subsequent third District Court of Appeal's denial of the petition are attached to this Addendum to verify the response made. The petitioner in the trial court matter had sought a writ of mandate to overturn the trial court decision. That petition was denied; accordingly, the trial court decision is final. The three court case decisions were not documents relied upon, but are added to the file as part of the response to comment.

Page 15 A reference was made to the USEPA's adoption of a reporting level of 5 ppb for MTBE; the citation for that statement is Federal Register 64(180), September 17, 1999, p. 50613.

Page 18 A copy of an internal memo dated November 16, 1988, from the Division of Drinking Water and Environmental Management's staff attorney, on the subject of the applicability of CEQA requirements to the adoption of MCLs is provided with this Addendum. This memo was not a document relied upon, but is added to the file in response to comment. The FSR had referred to a 1990 determination, but the date was a typo and should have read "1988".

The rationale expressed in the memo is that the adoption of statewide MCLs is categorically exempt from CEQA. The memo's rationale is still valid today. The current

CEQA law is as follows: Title 14 Section 15061(b)(2) states that projects are exempt if they come within categorical exemptions and are not barred by the exceptions in Section 15300.2. CCR Title 14 Section 15308 establishes the categorical exemption applicable to MCL adoption: "Class 8 consists of actions taken by regulatory agencies, as authorized by state or local ordinance, to assure the maintenance, restoration, enhancement, or protection of the environment where the regulatory process involves procedures for protection of the environment. Construction activities and relaxation of standards allowing environmental degradation are not included in this exemption." Therefore, MCL adoption is exempt in that such regulations are intended to assure the maintenance, restoration, enhancement and protection of drinking water, and this categorical exemption is not barred by any of the exceptions listed under 15300.2. CEQA Guidelines section 15062 state that a notice of exemption "may" be filed after project approval (MCL adoption); there is no mandate. The second basis for exemption stated in this memo is not applicable to adoption of the MTBE MCL.

Page 19 When commentator 6 made reference to 1.4% of the water sources as being over the MCL, the commentator was in error and had misread the Initial Statement of Reasons in which the Department stated that 1.4% of the water sources had detections, not exceedances.

Page 19 In response to commentator 6, the Department did consider costs of compliance to public water systems, customers and other affected parties, as noted in the response. However, the costs related to monitoring only, not costs resulting from best available technology installed to come into compliance with the proposed MTBE MCL, since no active sources at the time the MCL was proposed exceeded the proposed MCL. Monitoring costs by sources and to systems by type and size were presented as well as aggregated in the Fiscal Impact Analysis and discussed in the ISR, Form 399, and FSR. Costs to customers were not calculated, though they were considered in that a review of the monitoring costs indicated that customer costs for monitoring would be insignificant. Therefore, the Department complied with Health and Safety Code Section 116365.