California State Auditor

BUREAU OF STATE AUDITS

California's Drinking Water:

State and Local Agencies Need to Provide Leadership to Address Contamination of Groundwater by Gasoline Components and Additives

December 1998
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December 17, 1998 98112

The Governor of California
President pro Tempore of the Senate
Speaker of the Assembly
State Capitol
Sacramento, California 95814

Dear Governor and Legislative Leaders:

As requested by the Joint Legislative Audit Committee, the Bureau of State Audits presents its audit report concerning improvements needed to better protect California's groundwater from contamination by gasoline components and additives. This report concludes that in spite of mounting evidence of gasoline contamination of our drinking water, the Department of Health Services and the State Water Resources Control Board missed opportunities to aggressively address the problem.

Also, the State's process for regulating the safety of its citizens' water, and especially for ensuring that gasoline does not contaminate drinking-water sources, has multiple shortcomings. The State has been inconsistent in its efforts to identify and clean up leaking underground storage tanks, and the California Environmental Protection Agency's process for auditing the local agencies responsible for issuing permits to storage tank operators and for monitoring the tanks requires modification to assure that the agencies catch all leaks and deficiencies. Also, the Department of Health Services needs to improve its procedures to ensure that public water systems submit laboratory results promptly so agencies can identify and alleviate contamination quickly.

Finally, the Department of Health Services and the state and regional boards are not making certain that public water system operators, storage tank owners or operators, and regulatory agencies responsible for detecting and cleaning up chemical contamination are doing their jobs. To further compound this problem, the Department of Health Services, the regional boards, and the local agencies have not vigorously enforced laws that require prompt follow-up monitoring for chemical findings and contaminated sites, notifying the public about chemicals found in groundwater, and managing the cleanup of chemical contamination of groundwater.

Respectfully submitted,

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SUMMARY

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Our review of the State's regulatory process for ensuring the quality of drinking water concludes the following:

- ☑ *Health Services could have acted sooner to adopt regulations addressing MTBE's impact on drinking-water supplies. Also, the state board has not yet issued specific guidelines or standardized procedures for cleaning up MTBE-contaminated sites.*
- ☑ *The State's regulatory process has multiple shortcomings in the areas of identifying and managing threats to drinking-water supplies. Further, regulatory entities have not adequately enforced water quality laws.*
- ☑ *Both Health Services and the state board are working on parallel mapping projects to identify potential sources of drinking-water contamination. This duplication of efforts could be unnecessarily costly to the State.*

RESULTS IN BRIEF

Although the State of California has ample evidence that gasoline leaking from underground storage tanks is jeopardizing the safety of our drinking-water supplies, it has not acted quickly and decisively to address this potential health hazard. The scientific community and the public are particularly concerned about leaking storage tanks contaminating numerous groundwater sites and some drinking-water wells with *methyl tertiary-butyl ether* (MTBE), a gasoline additive that reduces air pollution from automobile exhaust, but which the federal government has classified as a possible cancer-causing agent.

State legislation directs various state and local agencies to oversee the safety of California's drinking water, including the Department of Health Services (Health Services), the State Water Resources Control Board (state board), the California Environmental Protection Agency (California EPA), and nine Regional Water Quality Control Boards (regional boards). As early as 1990, Health Services' officials became aware that MTBE was contaminating drinking-water wells within California; however, Health Services did not establish regulations to test for MTBE in drinking water until 1997, nor did it adopt interim emergency regulations, even though it has the authority to do so. The state board also shares responsibility for not providing leadership to the regional boards and local agencies responsible for alleviating groundwater contamination because it has not yet issued specific guidelines or standardized procedures for cleaning up MTBE. Thus, MTBE levels at some contaminated groundwater sites remain high, posing potential threats to nearby drinking-water wells.

Moreover, the State's process for regulating the safety of its citizens' water, and especially for ensuring that gasoline does not contaminate drinking-water sources, has multiple shortcomings. The State has been inconsistent in its efforts to identify and clean up leaking underground storage tanks, and the California EPA's approach for overseeing the local agencies responsible for issuing permits to storage tank operators and for monitoring the tanks may not assure that the agencies catch all leaks and deficiencies. Health Services' procedures for obtaining sample

analyses from public water systems also have flaws. Health Services needs to improve its procedures to ensure that public water systems submit laboratory results promptly so that agencies can identify and alleviate contamination quickly.

To further compound the problems surrounding MTBE contamination, Health Services and the state and regional boards are not making certain that public water system operators, storage tank owners or operators, and regulatory agencies responsible for detecting and cleaning up chemical contamination are doing their jobs. Not only does the State regulate underground storage tanks ineffectively, it has failed in some instances to aggressively enforce the State's Safe Drinking Water Act and the laws governing underground storage tanks. Specifically, Health Services, the regional boards, and local agencies have not adequately enforced laws that require prompt follow-up monitoring for chemical findings and contaminated sites, notified the public about chemicals found in drinking water, and managed the complete cleanup of chemical contamination of groundwater.

Some regulatory problems arise from poor communication among various state and local agencies. However, a geographical information system (GIS)—the State's proposed solution for assessing contamination risks to drinking-water sources, as well as for relaying information about these risks to responsible agencies—also requires improvement. Currently, both Health Services and the state board are working on GIS projects to map potential sources of drinking-water contamination, and this duplication of effort could be unnecessarily costly to the State. Health Services should serve as the lead developer for the GIS because it can use the system to evaluate risks to the State's approximately 16,000 drinking-water sources and thus accomplish the goals of the federally mandated Drinking Water Source Assessment and Protection Program. Finally, neither agency can effectively implement a GIS until the State significantly improves the databases containing information on the locations of possible contamination.

RECOMMENDATIONS

To ensure that California's drinking water is safe from contamination by gasoline leaking from underground storage tanks, the California Environmental Protection Agency and the Health and Welfare Agency, which oversees Health Services, need to make

certain that the state, regional, and local agencies listed below fulfill their designated responsibilities and improve their policies and procedures in the ways outlined.

The California Environmental Protection Agency needs to take the following steps to locate leaking underground storage tanks:

- Ensure that local agencies increase their efforts to identify storage tanks without permits, issue permits as appropriate, monitor storage tank safety, and penalize owners or operators that delay reporting leaks.

- Modify its existing procedures for evaluating local agencies' adherence to program requirements for leaking storage tanks by requiring its own evaluators to review these cases.

The Department of Health Services needs to do the following to manage threats to drinking water systems:

- Strengthen its process for promptly obtaining and analyzing laboratory results from all public water systems so it can quickly notify other agencies of threats to drinking water.

- Ensure that it assesses the safety of drinking-water sources for public water systems at least once every three years, as required by state regulations.

- Consistently enforce the State's water quality laws by following up on corrective actions taken by the district offices and the local agencies.

- Take the lead in establishing a geographical information system (GIS) that will fulfill requirements for the federally mandated Drinking Water Source Assessment Protection Program, help the State monitor risks to drinking-water sources, and allow for state and local agencies to exchange accurate information about these risks.

The State Water Resources Control Board should act on the following suggestions to help prevent further contamination of drinking-water wells:

- Issue the regional boards and local agencies a set of clear guidelines for investigating and cleaning up MTBE in groundwater.

- Assist in developing Health Services' GIS by correcting problems with the state board's Leaking Underground Storage Tank Information System (LUSTIS) so that this database is both accurate and compatible with GIS.

Further, the regional boards and local oversight program agencies directly responsible for managing groundwater sites affected by gasoline should take the following actions:

- Notify Health Services promptly about potential contamination.

- Use their enforcement authority to penalize storage tank owners or operators who do not comply with the law.

- Continuously follow up on enforcement actions and cleanup efforts.

AGENCY COMMENTS

The Department of Health Services generally agrees with the recommendations in our report, with the exception of our recommendation that it should no longer permit its staff to round off the numbers when determining whether a chemical exceeds the maximum contaminant level. Additionally, Health Services still believes that emergency regulations were not justified and that the approach it took to regulate MTBE was prudent. Finally, Health Services states that if it is to expand its role on the State's GIS projects, it will require a substantial increase in resources.

Similar to Health Services, the State Water Resources Control Board generally concurs with the recommendations in our report. However, the state board believes that it would be appropriate for it to complete the tasks for its existing GIS project, outlined in the 1997 legislation, before Health Services assumes the lead role for ensuring that a GIS provides the necessary information to protect drinking-water wells. Also, the state board indicates that it will work cooperatively with Health Services to ensure that it avoids duplication of efforts and that its efforts are complementary to those of Health Services.

Finally, the California Environmental Protection Agency supports the position taken by the state board. In addition, the California EPA provides some supplemental information about its Unified Program. ■

INTRODUCTION

BACKGROUND

Public concern with the drinking water from groundwater sources has heightened since oil refiners chose *methyl tertiary-butyl ether*, commonly referred to as MTBE, to meet federal cleaner air quality requirements (see box). The refiners selected MTBE primarily because it has a reasonable price; ready availability; a high octane rating; and an ability to dissolve, disperse, and suspend evenly in both gasoline and water. However, since the State increased its use of MTBE to meet the 1995 federal requirements, MTBE detected in drinking water has been responsible for wells closed in Santa Monica, Lake Tahoe, Sacramento, and Santa Clara. Although such gasoline contaminants as benzene, toluene, ethylbenzene, and xylenes —commonly referred to as BTEX— have always threatened water sources, MTBE's high solubility in soil and water poses more of a hazard to drinking water from groundwater sources because it can occur at greater concentrations. Once it infiltrates groundwater, MTBE generally moves with the same speed and flow pattern as water; thus, it can travel far from such leak sources as both underground storage tanks (storage tanks) and pipelines containing gasoline. On the other hand, BTEX, a traditional component of gasoline, is less soluble than MTBE and remains relatively close to the leak source, so BTEX leaks can be more readily contained. For the purposes of this audit, we have defined *gasoline contamination* as the presence of BTEX and MTBE in drinking water.

What is MTBE?

MTBE (*methyl tertiary-butyl ether*) is a chemical compound that oil refiners add to gasoline. Because of the oxygen-containing properties of MTBE, gasoline can burn more completely, reducing exhaust emissions causing air pollution.

Why does California use MTBE in gasoline?

The 1990 amendments to the federal Clean Air Act require the use of oxygenates in areas with poor air quality. Since 1992, California has added oxygenates to gasoline during the winter to reduce carbon monoxide in areas with poor air quality, which use about 80 percent of the State's gasoline. In 1995, additional amendments to the Clean Air Act required that vehicles use reformulated gasoline year-round that contains a minimum oxygen content of 2 percent by weight to help reduce smog in the worst areas, including Los Angeles, Sacramento, and San Diego.

Does MTBE affect our health?

Although researchers have no conclusive data on the health effects of MTBE contamination in drinking water, evidence from animals studies indicate that MTBE may be a human carcinogen.

In 1997, the Legislature, responding to public concern, called for a comprehensive assessment from the University of California of MTBE's effect on human health and the environment. In addition, the Legislature asked the university to propose viable alternatives to MTBE to reduce California's air pollution problems.

AGENCIES RESPONSIBLE FOR ENSURING SAFE DRINKING WATER

Through its water quality monitoring and inspection program, the Department of Health Services (Health Services) has primary responsibility for ensuring the safety of the State's drinking water. Various other entities, however, play additional roles in ensuring that the State's drinking water from groundwater sources is free from gasoline contaminants, such as MTBE. The State Water Resources Control Board (state board), nine Regional Water Quality Control Boards (regional boards), and local agencies oversee the investigation and cleanup of gasoline storage tank leaks. Additionally, local agencies issue permits and inspect storage tanks. Finally, the Office of the State Fire Marshal (Fire Marshal) investigates the cause of pipeline leakages and oversees their repair. However, local agencies, such as county or city fire departments, are chiefly responsible for ensuring that pipeline operators clean up leaks or spills. Each agency's role is outlined below.

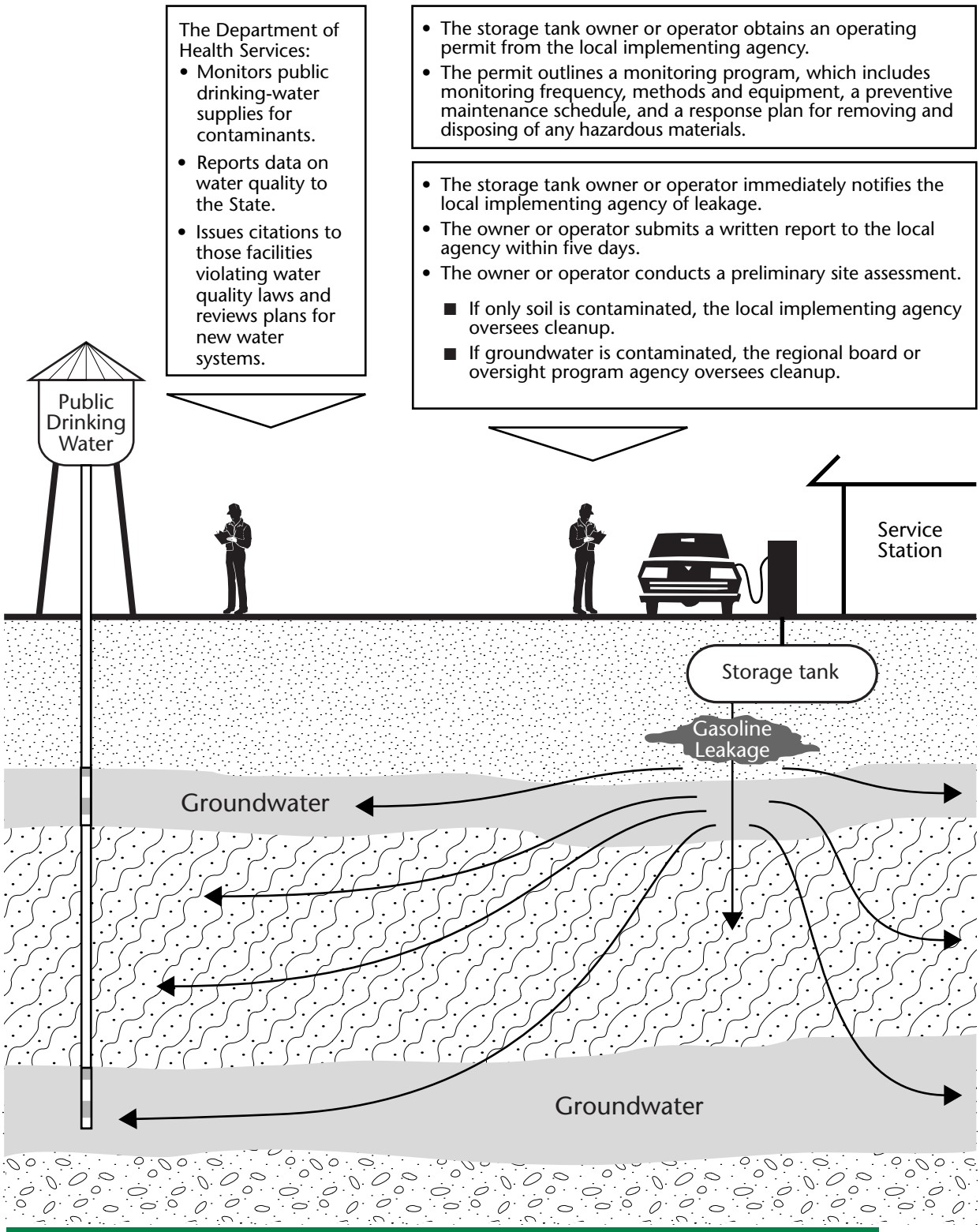
University of California's Assessment of MTBE

The University of California conducted an independent study to assess the potential health effects of MTBE, possible alternatives to its use, and its effect on California's groundwater. The university presented the following conclusions to the public in November 1998:

- MTBE is an animal carcinogen with the potential to cause cancer in humans. Anecdotally reported health effects of MTBE exposure were headache, nausea or vomiting, burning sensation in the nose or mouth, coughing, dizziness, disorientation, and eye irritation, among other symptoms.
- If concentrations of MTBE travel in groundwater over periods of years or decades, cleanup will become significantly more difficult and costly. Thus, appropriate entities should immediately evaluate the extent of known or suspected groundwater contamination and potential threats to drinking-water supply wells.
- California should gradually decrease its use of MTBE over several years, and the State should promptly assess the use of other oxygenates, such as ethanol.

FIGURE 1

Monitoring Potential Sources of Groundwater Contamination in Public Drinking-Water Supplies



The Department of Health Services' Role in Monitoring Water Quality

Under the federal Safe Drinking Water Act (act), the State is required to regulate contaminants that may be health risks in drinking-water supplies for public water systems serving at least 25 people or having at least 15 service connections.

Health Services' Division of Drinking Water and Environmental Management (division) oversees the State's safe drinking-water program by developing water quality and monitoring regulations; studying contaminants in drinking water; and compiling, evaluating, and reporting data on drinking-water quality in the State. The division also monitors and inspects approximately 8,500 public water systems throughout the State; however, only about 4,700 of these systems are required to monitor for such organic chemical contaminants as BTEX and MTBE. Public water systems provide water for human consumption through pipes or other constructed conveyances. The Appendix provides a detailed overview of the various public water system classifications.

Health Services' staff in its 15 district offices inspect water facilities, issue citations to facilities violating water quality laws, issue permits allowing facilities to operate, and review plans for new water system facilities. To assist with its regulatory responsibilities, Health Services has delegated the administration and enforcement of water quality regulations for small public water systems to 34 county health departments, commonly referred to as local primacy agencies (primacy agencies). However, the division remains responsible for overseeing, assisting, and training the primacy agencies, which regulate 2,283 small public water systems, each serving less than 200 service connections all year.

The Functions of the Water Quality Control Boards and Local Agencies

The state board administers state and federal laws pertaining to prevention and cleanup of storage tank leaks. In addition, the State has established a permit program dictating to tank owners and operators the proper design, construction, and monitoring of new and existing storage tanks. Funded in part by fees charged to the tank owners, the permit program is the responsibility of 107 local implementing agencies (implementing agencies), composed mainly of county environmental health departments and city fire departments throughout the State.

The implementing agencies issue tank operating and closure permits, inspect and approve tank construction and monitoring systems, and oversee leak cleanup in selected cases. The State intended the permit program to prevent future water quality problems; thus, the program requires applicants to describe their safeguards for preventing or detecting leaks from underground storage tanks. For example, many storage tanks have alarms that set off if there is a leak. Additionally, the implementing agencies are responsible for inspecting each storage tank site at least once every three years to determine whether the storage tank system complies with construction standards and with monitoring and testing requirements, and whether the tank system is in safe operating condition.

Status of the Requirements for Upgrading Storage Tanks

State law gave storage tank owners a 10-year time frame, ending December 22, 1998, to remove, replace, or upgrade tanks that do not meet certain state and federal standards. After January 1, 1999, those tank owners that have not upgraded by the deadline will not receive petroleum products.

As of September 30, 1998, 27 of the implementing agencies that we surveyed reported having issued upgrade certificates for only 18.5 percent of their 15,765 storage tanks. The agencies' delays in issuing certificates were due primarily to current workload demands. However, recent legislation will allow the implementing agencies a 90-day extension to issue upgrade certificates for storage tanks already meeting the specified design and construction standards by the deadline.

Finally, as a condition of receiving a permit to operate an underground storage tank, the owner or operator is required to notify the local agency immediately about any leaks or spills into the soil or groundwater and then to submit a written report within five days documenting the incident. When a storage tank has leaked and the implementing agency has identified contamination, the tank owner or operator must clean up the contaminated site.

Regional boards and local agencies share the job of overseeing cleanup of storage tank leaks or spills affecting groundwater. As part of its Local Oversight Program (oversight program), the state board has contracted with 20 local agencies that oversee the investigation and cleanup of leaking storage tanks. Agencies in this oversight program also serve as implementing agencies, so they issue permits, inspect storage tanks, and oversee the cleanup of contaminated storage tank sites, after which the regional board certifies that the cleanup is complete. An appropriate regional board regulates any jurisdictions not included in the State's oversight program.

For cases in which a regional board is the overseeing agency for a cleanup, the regional board approves the investigation and cleanup proposals storage tank owners or operators submit. Regional boards also provide technical assistance to local agencies and storage tank owners, advising them on proper monitoring, well construction, sampling techniques, and cleanup technology.

The Office of the State Fire Marshal's Role in Overseeing Pipeline Leaks

The Office of the State Fire Marshal (Fire Marshal), which is part of the Department of Forestry and Fire Protection, is responsible for ensuring that pipeline operators within the State safely transport such hazardous liquids as gasoline. Pipeline operators are to report any unauthorized releases of hazardous liquids immediately to both the local fire department and the State's Office of Emergency Services (OES). The OES's warning center then notifies various local, state, and federal agencies, including the Fire Marshal, Health Services, and the state and regional boards. If the leak is from a pipeline, Fire Marshal engineers investigate the cause and remain on-site until the pipeline is repaired. The engineers provide technical expertise and advice on the proper procedures for mitigating the release and repairing the pipeline to the pipeline operators and other local agencies responsible for the cleanup, such as county or city fire departments; however, the Fire Marshal does not have direct authority for ensuring the cleanup of pipeline releases of gasoline contaminants.

SCOPE AND METHODOLOGY

The Joint Legislative Audit Committee requested that the Bureau of State Audits determine whether the State is adequately protecting California's drinking water from gasoline contamination by leaking underground storage tanks and pipelines that transport hazardous liquids. However, multiple factors helped us determine that the audit should focus mainly on gasoline contamination resulting from storage tank leaks. First, investigations of contaminated drinking-water sources generally indicate that storage tanks, rather than pipelines, are at fault. Second, although the Fire Marshal inspects pipelines and oversees the repair of leaking pipelines, it has no direct responsibility for cleaning up these spills. Finally, the Fire Marshal is not required to monitor the State's water quality. For these reasons, this

report addresses the effect of gasoline contamination only on drinking water obtained from groundwater sources, that supply approximately 40 percent of the State's drinking water, and does not encompass pipeline leaks.

To understand the State's regulatory responsibilities for ensuring the safety of drinking water and protecting it from storage tank and pipeline releases of hazardous liquids, we reviewed the relevant laws, regulations, and policies governing these activities. In addition, we conducted interviews with management of Health Services, the state board, and selected regional boards to discuss existing and future policy decisions.

To learn about MTBE and its effect on groundwater, we reviewed information from the federal Environmental Protection Agency, the California Environmental Protection Agency, the University of California, Lawrence Livermore National Laboratory, the Santa Clara Valley Water District, and the Orange County Health Care Agency.

To determine how Health Services developed its standards and procedures for monitoring and testing drinking water and to confirm that the standards and procedures are at least as stringent as those established by the federal Environmental Protection Agency, as required, we compared the federal and state laws and regulations. We focused on those laws and regulations prescribing testing frequencies, location of sources tested, the contaminants the tests should detect, acceptable levels of contamination, reporting requirements, and responses to identified contamination. We found no significant differences between the federal laws and regulations and California's comparable statutes and regulations.

To evaluate whether Health Services properly monitors public water systems, we conducted field visits to nine of its district offices and four primacy agencies. The nine districts we selected regulate public water systems that the Health Services' database has identified as having significant amounts of BTEX and MTBE. We reviewed at least three water systems from each district. However, one district had only two public water systems with chemical findings for BTEX and MTBE. At each of the four primacy agencies in our sample, we chose three water systems for review. We tested a total of 39 public water systems for adherence to established laws, policies, and procedures regarding water quality monitoring. Five of the 39 public water systems tested were brought to our attention by interested parties.

To assess whether the regional boards and local agencies are effectively managing leaking storage tanks that threaten groundwater, we conducted field visits to five regional boards and six local agencies and reviewed selected case files. We randomly selected 34 cases of leaking storage tanks obtained from the state board's database, the Leaking Underground Storage Tank Information System (LUSTIS). In addition, we selected 9 cases that interested parties brought to our attention. Thus, we reviewed 43 cases in which leaking storage tanks had contaminated groundwater.

To assess the reliability and completeness of the State's Water Quality Monitoring and Water Quality Information databases, both maintained by Health Services, we interviewed staff and examined relevant information, such as administrative controls, procedures manuals, system narratives, flowcharts, and software guidelines. Additionally, to assess the accuracy of these two databases, we obtained the laboratory results for selected public water systems from 14 state-certified testing laboratories and compared those results to the information contained in the databases.

We performed similar procedures to assess the reliability and completeness of the LUSTIS, which tracks releases from storage tanks. We also reviewed the feasibility study outlining the purpose of the LUSTIS. Furthermore, we reviewed the audit reports prepared by the state board's Office of Statewide Consistency for eight of the nine regional boards. These reports identify deficiencies with the LUSTIS and the related responses from the regional boards. Finally, because the State has no database for tracking releases from pipelines that transport hazardous liquids, we were unable to evaluate this information.

To determine the progress the State has made towards meeting the mandated certification deadline of December 22, 1998, for upgrading underground storage tanks containing petroleum, we randomly selected and surveyed 27 of the 107 implementing agencies about this issue. Specifically, we asked each of the 27 agencies to list the number of underground storage tanks under its jurisdiction, the percentage of these tanks that are currently certified, and the overall percentage expected to receive certification by the deadline. Furthermore, we reviewed recent legislation allowing implementing agencies to petition the state board before December 1, 1998, for a 90-day extension for receiving their upgrade certificates.

Finally, to evaluate the State's planned approach for establishing a geographical information system (GIS), we reviewed existing laws requiring the state board to determine the feasibility of such a mapping system. Additionally, we reviewed Health Services' proposed plans for developing a GIS to support its assessment of the risk to California's drinking-water sources. ■

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CHAPTER 1

The State Has Not Exerted Leadership in Addressing Gasoline Contamination of Drinking-Water Sources

CHAPTER SUMMARY

The State of California has missed opportunities to aggressively address the problem of gasoline contamination of our drinking water even though the State has had sufficient evidence that leaking storage tanks and gasoline additives pose a major threat to California's groundwater. The State's Department of Health Services (Health Services) has delayed adopting regulations to test for the presence of *methyl tertiary-butyl ether* (MTBE), which may be a human carcinogen, and has not disseminated guidelines for its clean up. In addition, flaws exist in the regulatory process for ensuring that California consumers receive drinking water from groundwater sources free of gasoline contaminants. Specifically, early detection methods for identifying releases of gasoline contaminants are not always reliable and tank owners and operators are not promptly reporting threats to drinking water. Further, once regulatory agencies have identified gasoline contamination, these agencies have not vigorously managed efforts to alleviate the contamination. Similarly, the regulatory agencies have not been sufficiently aggressive in taking enforcement actions against those individuals or entities that violate water quality laws.

THE STATE HAS TAKEN A "WAIT AND SEE" APPROACH TO HANDLING MTBE CONTAMINATION

The State must follow a lengthy protocol when determining the risk factors of drinking water contaminants, and inconclusive scientific information can hinder the State's efforts to formulate policies for particular contaminants. Nonetheless, the State's Department of Health Services and the State Water Resources Control Board (state board) had sufficient information and opportunities to deal aggressively with MTBE contamination in

water sources. Health Services and the state board could have responded to available information on the potential health effects of MTBE and the differences noted between MTBE and BTEX when these chemicals are exposed to groundwater. Ultimately, the Legislature has had to take the lead on the issues surrounding MTBE by requiring Health Services to adopt primary and secondary drinking-water standards for MTBE and by calling for studies on MTBE's effect on human health, as well as analyses of possible alternatives to its use in gasoline.

BACKGROUND

Legislation directs Health Services to adopt a primary drinking-water standard for MTBE by July 1, 1999. Before Health Services adopts this standard, which is the level at which a contaminant can adversely affect public health and for which the State can enforce compliance, the Office of Environmental Health Hazard Assessment (OEHHA), part of the California Environmental Protection Agency (California EPA), must establish a public health goal for the contaminant. Health Services established the State's current nonenforceable interim action level for MTBE in 1991, which is the amount of MTBE that researchers would not expect to adversely affect the public health if it were present in drinking water. Because the OEHHA took into account only the noncarcinogenic effects of MTBE, the level is 35 parts per billion (ppb); however, in June 1998, the OEHHA proposed a public health goal of 14 ppb for MTBE in drinking water to consider these effects. The State will adopt a public health goal after it considers public comments to the proposed level.

Steps the State Takes to Establish Drinking-Water Standards

OEHHA performs a risk assessment that answers these questions:

- How much of the chemical could be in the drinking water?
- How much water is the average person likely to drink?
- What is the likelihood that exposure to the chemical will affect public health?

OEHHA determines a public health goal based upon the level of chemical a person could consume daily in two liters of water for 70 years with no ill effects. The public health goal depends solely upon scientific and public health considerations.

Using the best available technology, Health Services evaluates the cost to public water systems and their customers if they comply with the public health goal. Health Services then compares this cost with the health risk to the public.

Based on the above, Health Services determines the level at which the chemical can be present in drinking-water supplies. This level then becomes a drinking-water standard for which the State may enforce compliance.

Additionally, Health Services was required to adopt a secondary drinking water standard by July 1, 1998. Secondary drinking-water standards address the cosmetic effects (that is, skin or tooth discoloration) or aesthetic changes (that is, taste, odor, or color) that a contaminant may cause. The adoption of Health Services' proposed secondary maximum contaminant level of 5 ppb is pending the Office of Administrative Law's review and approval process, which is scheduled for completion by December 1998. If the State adopts this level, it will require certain public water systems to monitor groundwater every three years and notify Health Services and the public when MTBE levels exceed the standard.

The State Was Late in Adopting Emergency Regulations for Monitoring MTBE

The State was aware as early as 1990 that MTBE was affecting drinking-water supplies when the Presidio of San Francisco detected MTBE contamination in two of its drinking-water wells at levels ranging from 1 to 500 ppb. Although the State had adopted a nonenforceable interim action level of 35 ppb in 1991, Health Services did not ask certain public water systems to voluntarily monitor for MTBE contamination until February 1996. Specifically, Health Services issued an advisory to public water systems stating that, although it believed MTBE contamination of public drinking-water supply sources to be unlikely, some factors were cause for concern, such as the widespread use of MTBE and the historic problem with leaking underground storage tanks (storage tanks) containing motor vehicle fuel. Therefore, Health Services encouraged those public water systems conducting routine chemical testing and those with drinking-water wells near sites of contamination or leaking storage tanks to commence MTBE testing in 1996. Then, in 1997, Health Services adopted regulations requiring certain public water systems to begin monitoring drinking-water sources for MTBE.

In light of the evidence surrounding MTBE's potential threat to drinking-water sources, Health Services could have responded sooner to regulate this chemical.

In light of the evidence surrounding MTBE's impact on drinking-water sources that began to surface in the last decade, Health Services could have responded sooner to regulate this chemical. California oil refiners, who in 1979 began using MTBE in gasoline as an octane booster and replacement for lead at a rate of 2 to 3 percent per gallon, increased it to 11 percent to meet the 1995 federal mandates. In 1994, however, the federal Environmental Protection Agency noted that MTBE could be a human carcinogen; it would probably be highly mobile in soils, likely

moving into groundwater; and MTBE leaked from storage tanks could remain indefinitely in the subsoil because it may not biodegrade.

By the end of fiscal year 1995-96, there were approximately 7,200 sites where storage tanks leaked petroleum—much of it containing MTBE—into the groundwater.

As early as the 1980s, the Legislature required storage tank upgrades over concerns about the effects of leaks on drinking-water supplies, but by the end of fiscal year 1995-96, the state board was reporting that regional boards and local agencies were monitoring approximately 7,200 sites where storage tanks leaked petroleum—much of it containing MTBE—into the groundwater. Health Services was also aware in 1995 that MTBE contamination had been detected at levels ranging from 8.2 to 250 ppb in seven of the City of Santa Monica's primary drinking-water wells, which were located near storage tanks.

Given the chronology of warnings described above, we believe that Health Services had sufficient evidence on or before February 1996 to adopt emergency regulations for MTBE instead of simply issuing the advisory to public water systems. Under the provisions of the State's Safe Drinking Water Act, Health Services may adopt an emergency regulation if it is necessary for the immediate preservation of the public health and safety. Emergency regulations would have been exempt from the normal review and approval process and would have become effective once filed with California's Secretary of State. Further, the regulations could have remained in effect up to 180 days, thus affording Health Services ample time to complete the public notice process for adopting permanent regulations.

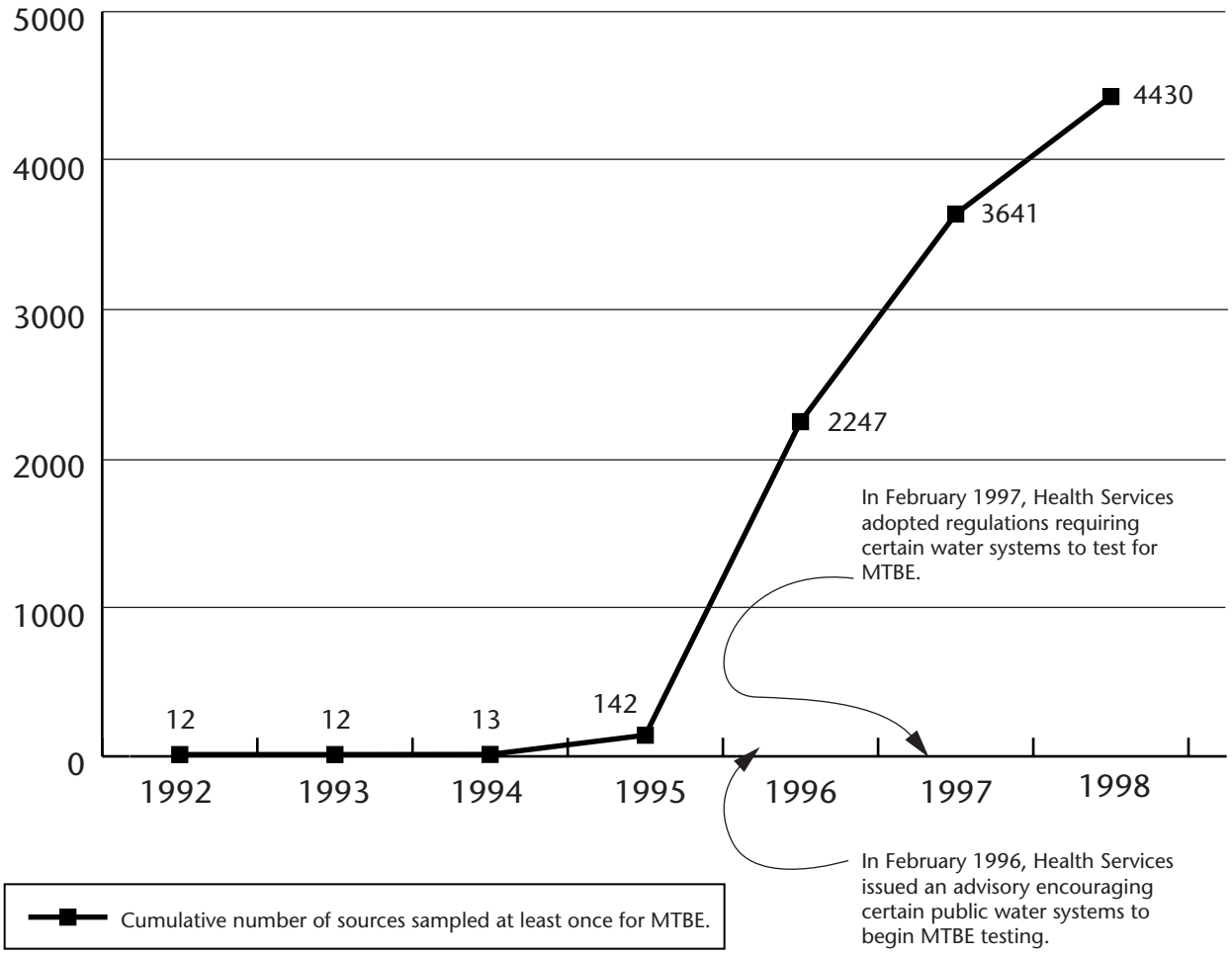
When asked why it did not adopt regulations sooner, Health Services stated that, although it considered adopting emergency regulations to establish monitoring requirements for MTBE, it concluded that the MTBE contamination identified at the City of Santa Monica's wells was not an emergency as defined by the State's Administrative Procedures Act. We disagree because this act, like the State's Safe Drinking Water Act, specifies that an emergency is an event that calls for the immediate preservation of the public health and safety.

Nonetheless, Health Services did not adopt any regulations until February 1997, one year after its advisory. These regulations require certain public water systems to monitor drinking-water sources likely to be affected by MTBE. As of October 7, 1998, 4,430 public drinking-water sources have been tested at least once for MTBE, as illustrated in Figure 2 below. MTBE has been

identified in 61 of these sources at levels ranging from .15 to 610 ppb. Of these sources, 25 have MTBE concentrations that exceed the proposed secondary maximum contaminant level of 5 ppb and would cause concern about the taste, odor, or color of the drinking water. However, for 469 sources, the water was not analyzed for MTBE concentrations less than 5 ppb.

FIGURE 2

The Number of Water Sources Tested Increased Significantly



Source: Department of Health Services' Water Quality Monitoring database.

Note: Data covers tests that occurred through October 7, 1998. Results include large ground and surface water sources. The results do not, however, include small water system sources.

LACK OF GUIDANCE FROM THE STATE CAUSES DISPARITIES IN MTBE CLEANUP EFFORTS

The state board has been overly cautious in its decision to delay issuing guidelines to the nine Regional Water Quality Control Boards (regional boards) and 20 Local Oversight Program (oversight program) agencies responsible for cleaning up MTBE contamination. As of November 1, 1998, the state board had not issued any guidelines regarding the appropriate approach for investigation or cleanup of MTBE detected in groundwater. As a result, several regional boards and oversight program agencies have developed their own interim guidelines or internal procedures on how to manage sites affected by MTBE, and the entities handle cases of MTBE leakage differently. Further, lack of a state policy for MTBE cleanup may prevent regional boards and oversight program agencies from enforcing their own guidelines.

The State Board Is Overly Cautious in Issuing MTBE Guidelines

A 1995 report in which the consultant did not address the effects of MTBE in groundwater received public criticism.

In November 1995, the state board's consultant, Lawrence Livermore National Laboratory, issued a report concluding that leaks from storage tanks did not appear to cause a pervasive problem with domestic drinking-water supplies and that gasoline contamination degraded within relatively short distances from the source. Further, the consultant recommended that the state board use whenever possible passive cleanup methods, such as a variety of physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce contaminants in groundwater. In contrast, active cleanup employs various methods to extract MTBE contamination from the groundwater.

Relying on its consultant's report, which did not address the effects of MTBE in groundwater, the state board issued interim guidelines to the regional boards and oversight program agencies responsible for overseeing cleanup of leaking storage tanks. The guidelines stated that, for low-risk groundwater cases, active cleanup of some sites was not necessary as long as the contamination was stable, that is, not migrating further off-site or increasing in volume.

However, the state board's decision received criticism from those who believed that the consultant's report not only minimized

problems with leaking storage tanks, it also failed to analyze the effects of MTBE on groundwater in response to the available scientific information from 1995 suggesting that MTBE was more mobile, and less likely to biodegrade. Consequently, the state board asked the consultant to perform more research, and issue another report addressing MTBE's impact on groundwater sources.

In a subsequent report, the consultant agreed that MTBE is more mobile in water and soil and more difficult to remove, than benzene.

In a more recent report, issued in June 1998, the consultant agreed that MTBE is both mobile and more difficult to remove than benzene. Further, the consultant concluded that the state board can use this assumption to formulate strategies for managing groundwater sources affected by MTBE. Thus, we conclude that a more active approach may be appropriate for MTBE contamination.

In October 1996, the state board circulated to the regional boards a draft policy, *Investigation and Cleanup of Petroleum Discharges to Soil and Groundwater*, with more specific guidance on cleanup of MTBE at storage tank sites. However, the state board has deferred issuing this policy until more information on MTBE becomes available from the University of California studies the Legislature requested in 1997, as discussed in the Introduction.

Boards' and Agencies' Guidelines and Procedures Vary for Managing MTBE-Contaminated Sites

Meanwhile, some of the regional boards and oversight program agencies have developed their own interim guidelines, resulting in inconsistent standards for addressing MTBE contamination statewide. Specifically, three of the five regional boards we visited have different criteria for handling cases involving MTBE contamination. Although these regional boards all consider various site-specific factors, such as the gasoline leak's proximity to drinking-water sources and the water's flow pattern, regional boards use varying levels of MTBE concentrations to decide the necessary course of action to manage the contamination cases. For example, each regional board first determines the beneficial uses of the water that MTBE may be threatening, then decides on a course of action based on the level of contamination that may affect drinking-water sources. One regional board pursues cleanup, continued monitoring, or site closure, depending on whether MTBE concentration levels exceed 200 ppb in groundwater and whether potential drinking-water sources are within 2,000 feet of the leak source. Another regional board decides its

course of action after it determines MTBE concentration levels in the affected groundwater exceed 35 ppb, whether a drinking-water well is within a one-mile radius of the leak source, and whether benzene has also contaminated any drinking-water well. Finally, a third regional board requests responsible parties to clean up the contamination if the MTBE concentrations are greater than 1,000 ppb, or to monitor the site if the MTBE levels are between 10 ppb and 1,000 ppb. It will close the case if MTBE levels are below 10 ppb. One of the remaining two regional boards is currently developing guidance for staff, while the other said that due to the lack of information on how to treat MTBE, it has no written procedures for cleaning up MTBE contamination and is handling each case individually.

Regional boards and oversight program agencies use varying levels of MTBE concentrations to decide the course of action to manage the contamination.

Similarly, in the absence of guidance from any state or regional board, two of the six oversight program agencies we visited have developed their own procedures for handling MTBE. The remaining four oversight program agencies treat MTBE cases as they would any other hazardous substance release. The two oversight program agencies with procedures used varying criteria for prioritizing, investigating, and closing MTBE cases. One oversight program agency uses the cumulative average of the highest concentrations of MTBE reported for six quarterly samples from groundwater monitoring wells. Taking the resulting average, the oversight program agency places the case into one of six categories with MTBE concentrations ranging from a high of 1,000,000 ppb to as low as 20 ppb. The oversight program agency also considers other factors, such as the site's proximity to nearby sources of drinking water. Staff then require cleanup proposals from storage tank owners or operators, starting with those cases that present the greatest threat based on the level of contamination and proximity to existing and future drinking-water sources.

The second oversight program agency that has developed cleanup procedures initially screens cases, using a criterion of 200 ppb, to first determine those requiring additional investigation and cleanup. This oversight program agency has established four categories for prioritizing cases with MTBE. Highest-priority cases consider whether MTBE has affected a water well, as well as the extent of contamination in the groundwater samples, and whether the contamination could affect a drinking-water source 500 feet away. The lowest-priority cases are those sites where MTBE concentrations are lower than 350 ppb, or where the entities responsible for the contamination have completed their corrective actions and the cases are awaiting closure.

Obviously, until the state board provides an official uniform policy for investigating and cleaning up storage tank sites affected by MTBE, regional boards and agencies will continue to issue their own interim guidelines and procedures, resulting in inconsistencies statewide. The State's lack of a formal position on MTBE may also undermine the enforcement authority of regional boards and oversight program agencies if responsible parties ordered to clean up sites contaminated by MTBE disagree with the overseeing authority and appeal their cases to the state board.

THE STATE'S REGULATORY PROCESS, WHICH ENSURES THE SAFETY OF OUR DRINKING WATER, HAS DEFICIENCIES

The State has a flawed regulatory process for ensuring that groundwater sources provide drinking water free of gasoline contaminants. We found deficiencies at every step of the regulatory process, from issuing permits to owners and operators of storage tanks—the primary sources of gasoline contamination—to enforcing laws designed to protect us.

The State Needs to Increase Efforts to Identify Leaking Storage Tanks

In most cases, leaks are not discovered until the tanks are removed, rather than as part of an agency monitoring program.

The 1984 state law designed to address the problem of leaking storage tanks is not producing the desired outcome, which is identifying leaking storage tanks and ensuring that the regional boards and local agencies require the owners or operators to clean up leaks promptly. In a 1996 study, the state board found that leaks are not discovered until the tanks are removed, rather than detected as part of an ongoing monitoring program. Also, some tank owners have not obtained required permits. Therefore, leaking storage tanks that responsible entities have not identified could be contributing significantly to groundwater contamination.

To obtain an operating permit, a storage tank owner or operator must establish an early detection system for leaks. Monitoring for leakage can occur in a number of ways, including gauging the gasoline level with automatic systems, performing manual inventory reconciliations, and testing tanks annually for leaks. In their operating permits, tank owners must specify a monitoring plan that must be approved by the local implementing agency (implementing agency). The monitoring plan establishes

written procedures for routine monitoring, which specify the frequency of monitoring, the methods and equipment to be used, a preventive maintenance schedule, and a description of the training necessary for operation of both the tank system and monitoring equipment. In addition, the monitoring plan is to include the procedures that the owner or operator will follow in removing and properly disposing of any hazardous substances.

The 1984 state law governing storage tanks required implementing agencies to ensure that storage tanks within their jurisdictions meet the new permit requirements. At that time, the implementing agencies used several methods to compile an inventory of storage tanks located within their jurisdictions. They obtained listings from the state board and other entities and searched for abandoned storage tanks during routine inspections. Despite these creative methods, the six implementing agencies that we surveyed believe that they may not have identified a number of storage tanks. Obviously, owners or operators cannot receive permits for these unidentified storage tanks or monitor and inspect for leaks.

For 289 of the 345 cases reviewed, leaks were discovered during tank removal, not because of monitoring.

Between October 1995 and May 1996, the state board conducted a survey to determine the effectiveness of leak detection methods for underground storage tanks. It concluded that for 289 of the 345 cases of leaking tanks it reviewed (84 percent), the leak was discovered during tank removal, not when the tank owner received the original permit or during routine inspections. Further, the state board's survey data validated concerns that most of the leaking storage tanks were not consistently monitored. Specifically, the state board reported that an estimated 149 sites either were not monitored, or if they were, the monitoring records were not in the files, and the implementing agency did not know the monitoring history.

Additionally, the survey noted that, for those cases with available monitoring information, gaps up to 29 months long existed between the tank owner or operator's most recent monitoring report and the discovery of the leak, suggesting either that tank owners or operators are not performing sufficient leak detection procedures or that they are not promptly reporting the results of these procedures to the implementing agencies. Further, these gaps indicate that the implementing agencies are not adequately enforcing penalties for the tank owners' or operators' lack of adherence to leak detection requirements. To correct these

deficiencies, the state board recommended that the implementing agencies review each tank owner or operator's monitoring records for accuracy and also enforce compliance with monitoring and record-keeping requirements.

Similarly, some owners are not obtaining required permits to operate their underground storage tanks. We found that for 11 of the 43 cases reviewed, groundwater contamination was discovered upon removal of an unpermitted tank. Because the tanks never received permits, monitoring plans did not exist.

We noted that some implementing agencies either did not prepare inspection reports or the reports were deficient.

In addition to failure on the part of the storage tank owner or operator to monitor for leaks, we noted that in five other cases reviewed, the implementing agencies either did not prepare inspection reports or the reports were deficient. For example, one inspection report failed to cite a storage tank owner who was operating without a permit. Another inspection report indicated that the inspector had noted the presence of a monitoring report when, in fact, no such report existed.

The California EPA Should Improve the Proposed Audit Process for the Unified Program

The California Environmental Protection Agency's (California EPA) audit process for its Unified Program needs to provide additional assurance that State evaluators will detect deficiencies in the permit and inspection processes for storage tanks. Because the regulated community was confused by the myriad requirements for obtaining permits and inspecting hazardous waste facilities, in 1996, the California EPA developed the Unified Program. This program consolidates, coordinates, and standardizes the permit, inspection, and fee collection processes for six existing programs regulating hazardous waste and hazardous materials management, one of which monitors and inspects storage tanks.

The Certified Unified Program Agencies (unified program agencies) implement the Unified Program at the local level. Each unified program agency is responsible for all six program elements of the Unified Program within its jurisdiction. Previously, about 1,400 local agencies performed the hazardous materials and hazardous waste regulatory activities; now 69 unified program agencies fulfill these duties throughout the State. The remaining local agencies that the State has not certified as unified program agencies report to a unified program agency within their geographical area.

As part of this program, the California EPA will require each unified program agency to complete a questionnaire on its operations. For example, the unified program agency will need to evaluate its ability to issue permits promptly, to adequately train its inspectors, and to apply its enforcement standards uniformly. A team of state evaluators will review these questionnaires before the team's field audit. Once in the field, the team may consider reviewing documents to support statements in the unified program agency's questionnaire. The team will evaluate the agency's progress toward meeting its inspection goals and training requirements as well as the timeliness of its enforcement actions. However, our concern is that this high-level review of operations will not be able to detect the tank owners' or operators' departures from leak prevention and monitoring requirements. Specifically, the state evaluators are currently not required to review reports of releases of gasoline from storage tanks, although, reviews of cases involving these leaks would prompt additional questions about their causes and the owners' or operators' monitoring and inspection of the tank.

We are concerned that the Unified Program's high-level review will not detect departures from state requirements.

Before the establishment of the Unified Program, the state board had a similar evaluation program for the implementing agencies. Specifically, the state board requested that selected implementing agencies complete a questionnaire before the state board's field visits. Once in the field, the state board's evaluators would review selected files for compliance with the program requirements, in addition to validating the questionnaire responses.

The Unified Program could also benefit if its own evaluators always reviewed selected files. By analyzing the permit and inspection information contained in the selected files, the evaluators could have additional assurance that storage tank program requirements are met and that owners and operators are identifying and correcting deficiencies, such as those described on pages 24 and 25.

THE STATE NEEDS TO MAKE CERTAIN THAT IT RECEIVES TIMELY NOTIFICATION OF THREATS TO DRINKING WATER

Two sources notify the State of threats to drinking water: public water systems, which submit to Health Services analyses of samples drawn from drinking-water sources, or storage tank owners or operators, which inform the local agencies of releases

of gasoline contaminants. However, these regulatory entities do not always receive timely notification from either source about these threats. Delays in identifying and acting upon threats to groundwater supplies place the health of California citizens at risk.

HEALTH SERVICES NEEDS TO ENSURE PUBLIC WATER SYSTEMS PROMPTLY SUBMIT LAB RESULTS

Health Services does not ensure that all public water systems required to submit lab results to the State have in fact submitted the data from their water quality sampling. Also, because Health Services does not require electronic reporting of sample results, Health Services experiences delays in receiving 28 percent of the sample results. Finally, Health Services does not include in its database the sample results it receives from 4,600 small water systems. Until Health Services modifies its existing policies and procedures for tracking information on water quality monitoring, the State cannot ensure that all results are available for its timely evaluation of potential threats to drinking water.

State regulations require public water systems to collect water samples and to submit to Health Services the results of all sample analyses received in a calendar month no later than the 10th day of the following month. One of several hundred drinking water laboratories that Health Services certifies analyzes the samples. These labs are operated either by the public water system staff or by their contractors. The public water systems submit lab results to Health Services electronically, on a computer disk, or manually on a state form. Health Services' staff then enters the results in its Water Quality Monitoring database.

35 percent of the water analysis data from the labs surveyed did not appear in Health Services' database, as required.

However, Health Services has weaknesses in its process for obtaining and tracking lab results submitted by the public water systems. First, Health Services lacks a reconciliation process verifying that public water systems have submitted all lab results. We surveyed 19 labs to determine the accuracy and presence of lab results in the databases for the gasoline contaminants BTEX and MTBE found in the drinking water of selected public water systems. For the 14 labs responding to our survey, we found that 35 percent of the water analysis data the labs submitted for these public water systems did not appear in Health Services' database.

Secondly, we question Health Services' policy of allowing the public water systems to submit water analysis results 10 days after the month in which the systems collected the samples. Although water sample results exceeding the maximum contaminant level must be reported within 48 hours to the district offices, for the remaining water sample results, Health Services could be unaware of contamination trends for up to 41 days, even when the water systems have been prompt in submitting their results.

Currently, according to Health Services, approximately 60 percent of the labs are submitting their results electronically, and this process allows for early notification of potential threats. However, when asked why it does not require all labs to submit their results in this manner, Health Services stated that, although some public water systems direct their labs to submit data electronically, no statute or regulation requires them to do so. Instead, Health Services strongly urges public water systems and their labs to voluntarily submit their water quality data electronically. Moreover, Health Services states that it anticipates that future federal reporting requirements will result in all lab data being submitted electronically. However, Health Services' decision to wait for federal reporting requirements mandating the electronic submission of lab results is imprudent, since Health Services will continue to receive delayed notification of possible threats to drinking water. Instead, Health Services should amend its regulations to require the public water systems to electronically submit data.

Health Services does not record the water sample results for approximately 4600 small water systems.

Finally, we found that Health Services does not record the water sample results for approximately 4,600 small water systems. Currently, the local primacy agencies (primacy agencies), which oversee small water systems serving less than 200 service connections all year, must track analytical results for these systems and report to Health Services only those results that exceed a maximum contaminant level. By not recording small water system lab results in its database, Health Services has no opportunity to identify contamination trends that may affect neighboring water systems. If Health Services would note a contamination trend for a small water system, those responsible for managing a nearby larger public water system could monitor for the chemical and be alerted sooner to its migration. Further, this information can assist Health Services' district offices in overseeing the primacy agencies by allowing the districts to track small water system activity and identify potential problems sooner.

In July 1998, prompted by our inquiries, Health Services established a process by which primacy agencies voluntarily report lab results for small water systems. When asked why the primacy agencies are not required to submit analytical results, Health Services again stated that it believes future federal mandates will require states to input all sample data in databases on drinking water. However, again Health Services' decision to wait for federal requirements mandating the collection of sample results from small water systems in its database is imprudent. Instead, Health Services should amend its procedures to require that all sample results be included in its databases.

Timely Notification of Gasoline Leaks Is Necessary for Alleviating Groundwater Contamination Quickly

42 percent of the release forms reviewed indicate the storage tank owner or operator was slow to report the leakage.

Storage tank owners and operators that do not promptly report leaks to the appropriate local agencies are violating the law and putting California's drinking water at risk. We reviewed 24 Unauthorized Release Forms (release forms) that storage tank owners or operators submitted to implementing agencies in various locations throughout the State. For 10 of these forms (42 percent), the storage tank owners or operators had known about the releases for more than five days before reporting the leaks to the implementing agency. This delay occurred even though the law requires the storage tank owner or operator to notify the implementing agency within 24 hours of an unauthorized release, to investigate the condition, and to immediately stop the release. Additionally, the owner or operator must submit to the local implementing agency within five working days a written report on a release form to capture valuable information, such as when and how the leak was discovered; its source; whether it affected soil, groundwater, or drinking water; and what remedial action the owner or operator will take. In the 24 release forms reviewed, we noted that storage tank owner or operator reporting delays ranged from 3 days to 773 days. These delays can jeopardize the quality and safety of the State's drinking water.

THE STATE HAS NOT ADEQUATELY MANAGED CASES INVOLVING CHEMICAL CONTAMINATION OF DRINKING-WATER SOURCES AND STORAGE TANK SITES

Although Health Services and the state board have established procedures for addressing identified instances of gasoline contamination, our review of sample cases indicates that both

Health Services and the state board can improve their management of chemical contamination found in drinking-water wells and at leaking storage tank sites.

Some District Offices and Primacy Agencies Do Not Follow State Policies for Ensuring Water Quality

In reviewing sample cases for 39 public water systems, we found that not all of Health Services' district offices and not all primacy agencies responsible for managing cases of chemical contamination are consistently implementing established policies and procedures. As a result, public water systems throughout the State are subject to different monitoring and reporting requirements. For example, one district adheres to a unique interpretation of the maximum contaminant level for chemicals. Specifically, the State has adopted a maximum contaminant level of one part per billion (ppb) for benzene. If benzene exceeds this level, the public water system must report the result to Health Services within 48 hours and commence resampling once a month for six months. However, the district has implemented a "rounding policy" where it does not consider benzene detections of 1.1 to 1.4 ppb to constitute an exception to the maximum contaminant level.

When asked why it uses this policy, the district stated that those in the industry, including Health Services, accept this practice. Thus, public water systems under this district's jurisdiction would not commence Health Services' stringent reporting and sampling requirements until the chemical occurs at levels of 1.5 ppb. Although Health Services permits rounding, this was the only district out of the nine we visited that had implemented such a policy. This policy circumvents and minimizes the importance of the maximum contaminant levels and the stringent monitoring requirements designed to identify contamination trends. Therefore, Health Services should discontinue this rounding policy among its district offices.

A public water system did not perform monthly testing of a drinking-water source for over a year.

In another case, a district failed to adhere to the established sampling protocol for treated drinking-water sources. Chemical analysis of the water prior to treatment, over an eight-year period ending in May 1997, showed levels of benzene in the water supply that averaged 2.6 ppb. Because these levels exceeded the maximum contaminant level, the public water system was required to treat the water before distributing it to the public and to sample for chemicals monthly. However, the public water system did not test this drinking-water source

between May 1997 and August 1998. When asked why it had not required the public water system to collect monthly water samples, the district stated that it was confused about the differences in the sampling requirements for untreated and treated water. After we raised concerns over the 14-month lapse in testing, the district issued a letter in August 1998 requiring monthly tests until it reevaluates the situation to determine the degree of risk to the public's health. In the meantime, the district may have placed the health of the public water system's customers in jeopardy by not ensuring that the treated water was free from benzene, a known human carcinogen.

Finally, in another instance, we noted that a primacy agency chose not to comply with Health Services' sampling requirements for MTBE. It stated that the public water system was not vulnerable to MTBE because it had not detected BTEX in previous samples and in its risk assessment of the county's drinking-water sources. However, this noncompliance contradicts Health Services' direction that primacy agencies initially treat all sources as vulnerable. Further, the absence of BTEX does not rule out the presence of MTBE. The primacy agency has subsequently changed its position and will test for MTBE at the next scheduled routine sampling for the water system.

Additionally, we found that for 9 of the 39 public water systems we reviewed, either the district office or the primacy agency had not performed, or had performed incompletely, the critical assessments needed to determine the vulnerability of the drinking-water source to contaminants before the district office or primacy agency reduced the sampling frequency. Generally, unless the water system can demonstrate that a chemical has not been previously used, manufactured, transported, or disposed of near the drinking-water source, the

Determining the Vulnerability of a Drinking-Water Source to Contamination

If previous use of a chemical in a location is unknown, or if the chemical was used previously and the source cannot be designated nonvulnerable, the public water system may reduce sampling frequency after reviewing a source's susceptibility to contamination. The review must include the following:

- Previous monitoring results.
- User population characteristics.
- Proximity to sources of contamination.
- Surrounding land uses.
- Degree of protection of the water source.
- Environmental persistence and transport of the chemical in water, soil, and air.
- Elevated nitrate levels at the water supply source.
- Historical system operation and maintenance data, including previous inspection results.

water system must perform a vulnerability assessment every three years to support reduced sampling. In these nine instances, we were unable to determine justifications for reductions in the sampling frequencies. In order for Health Services to protect drinking-water sources adequately, it must ensure that its staff and primacy agencies adhere to established procedures.

Late Site Assessments Have Caused Significant Delays in the Cleanup of Gasoline Leaks

Critical to making a decision about the correct cleanup approach is the storage tank owners' or operators' assessments of the extent of the contamination and the potential effects on surrounding areas. However, our review of sample cases indicates that responsible parties are not completing these assessments promptly and delaying the cleanup of contaminated sites.

The regional board or oversight program agency has not always ensured that the party responsible for a contaminated site has acted promptly to characterize the extent of the contamination affecting groundwater. The minimum for a preliminary assessment of the site includes, an initial site investigation, removal of visible contaminants, and site characterization. The purpose of the preliminary site assessment is to determine the extent of existing soil contamination and its impact on groundwater. Further, an initial site characterization includes gathering information on the estimated quantity of the gasoline release and obtaining data from available sources. It also includes site investigations for the surrounding populations, water quality, use and proximity of wells potentially affected by the release, subsurface soil conditions, locations of subsurface utilities, water flow conditions, and land use. Regional boards and oversight program agencies use data collected during the preliminary site assessment to determine whether a contaminated site has been adequately cleaned up through initial actions or whether the storage tank site requires more extensive investigation and cleanup.

On average, responsible parties took 25 months to identify the extent of the contamination.

We found that in 41 of 43 of the cases (95 percent) we reviewed that had preliminary site assessments, the responsible parties submitted their reports an average of 25 months after the date the leak was first discovered or reported. Eighteen of the 41 responsible parties were able to submit their reports within six months. Therefore, barring extenuating circumstances, such as significant delays in obtaining drilling permits or substantial

changes to proposed work plans, six months seems a reasonable time frame for the responsible parties to submit their preliminary site assessment reports either to the regional board or oversight program agency.

Further, for three cases, staff from the regional board or oversight program agency did not manage the preliminary site assessment process well. As a result, in two cases, responsible parties did not complete critical actions, such as removing contaminants and excavating the soil after tank removal, for periods of up to seven years. In a third case, the responsible party did not perform any initial site characterization since the party first discovered the leak in June 1988.

Like Health Services, the regional boards and oversight program agencies must take a stronger position in requiring parties responsible for gasoline leaks to commence preliminary assessments immediately so that cleanup can begin quickly.

STATE AND LOCAL AGENCIES HAVE NOT ENFORCED WATER QUALITY LAWS AGGRESSIVELY

We found several instances in our sample cases that suggest the State's regulatory agencies have not been sufficiently aggressive in taking enforcement action against public water systems that do not comply with sampling or public notification requirements, or against parties that have failed to clean up contaminated sites, as required. Timely, consistent enforcement of the Safe Drinking Water Act and the Underground Storage Tank laws serve to protect the public health and the environment. In addition, enforcement can serve as a deterrent to potential violators. By not exercising their enforcement authority, Health Services, the regional boards, and local agencies are not ensuring the safety of the State's drinking water.

PUBLIC WATER SYSTEMS HAVE NOT RECEIVED PENALTIES FOR VIOLATING WATER QUALITY LAWS

In 7 of 39 sample cases, we found that Health Services or primacy agencies did not sufficiently penalize public water systems that did not comply with sampling or public notification requirements. Because Health Services' monitoring and reporting procedures are the primary means by which the State

assures that the public is receiving safe drinking water, any significant monitoring deficiency or violation should merit an enforcement action, such as a citation, compliance order, or administrative hearing.

Even though one small water system failed to test for gasoline contamination for almost 10 years, the oversight agency has not yet taken sufficient enforcement action.

For example, a small water system serving approximately 42 students and staff at an elementary school was severely delinquent in its routine monitoring and reporting of chemicals, and thus did not properly safeguard the purity of the water provided to its customers. The water system last performed an analysis of gasoline contaminants in 1989. In spite of the extended period of time in which this small water system was violating the drinking-water standards, the primacy agency took no enforcement action until September 1997, when it issued a compliance order requiring the small water system to submit, within 60 days, laboratory results from chemical testing. Even then, the primacy agency did not follow up in a timely manner: it contacted the system 10 months later by letter stating that, to avoid civil penalties, the system must submit the required water samples within 30 days. In response to our inquiry regarding this situation, the primacy agency submitted to us, in September 1998, an action plan explaining its intent to call an administrative hearing for the school officials to explain their failure to perform required water sampling.

In another case, in June 1997 a large water district serving approximately 11,000 people detected benzene in one of the district's five wells in concentrations exceeding the drinking-water standard. In July 1997, Health Services issued a compliance order requiring the water district to take several actions, one of which was quarterly notification to the water district that water quality had declined and that the water could have adverse health effects. Although the water district issued the first two quarterly notices, it did not issue all of the public notices required because it mistakenly believed it did not use enough water from this well to warrant the notification. After we inquired why the public notices stopped, the appropriate Health Services' district office contacted the water district, which subsequently issued another public notice on August 28, 1998. Three days later, the water district shut down the well. Nevertheless, for a period of 10 months, this water district had not informed customers of the threat to their drinking water, and it therefore denied customers the right to weigh all their alternatives to using the contaminated water. According to the

district office, it did not pursue enforcement because it felt that contacting the water district and requiring issuance of notice in August 1998 were sufficient.

OWNERS AND OPERATORS RESPONSIBLE FOR CLEANING UP CONTAMINATED SITES HAVE VIOLATED WATER QUALITY LAWS

Of the 43 cases that we reviewed involving gasoline contamination of water, we believe that seven warranted enforcement action. For these seven cases, the regional boards or local oversight program agencies did not aggressively exercise their enforcement authority to bring the responsible parties into compliance with water quality laws, and took as long as 10 years to penalize responsible parties for delaying such critical activities as the removal of contaminants, site investigations, and submission of technical reports.

When contamination from an unauthorized gasoline release has been identified, the responsible party is required to remove visible contaminants, conduct site assessments, and submit to the local agency or regional board overseeing the cleanup quarterly status reports about the investigation and cleanup activities. When responsible parties do not fulfill these obligations, regional boards can take a series of steps to enforce regulations. First, the appropriate regional board may issue a time-schedule order, which requires the responsible party to take certain actions within a given time frame. The board may also issue a cleanup order requiring immediate alleviation of the contamination. Further, the regional board can assess a monetary penalty, or administrative civil liability. Finally, regional boards can refer responsible parties to the State's Office of the Attorney General (attorney general) or to the local district attorney for enforcement through the courts.

The oversight program agency was overly tolerant of the responsible party's delays in cleaning up significant levels of benzene at a contaminated site.

In one of the seven cases in which adequate enforcement did not occur, the oversight program agency was overly tolerant of the responsible party's delays in cleaning up significant levels of benzene at a contaminated site, which moved from the leak source toward neighboring businesses and homes. In December 1989, a storage tank owner had removed four storage tanks from a site after laboratory results indicated that the groundwater beneath the site was contaminated. A preliminary site assessment report indicated that gasoline contaminants could continue to be a problem, especially because utility lines were

nearby and because of speculation that neighboring properties' soil and groundwater had also become contaminated. The report further noted that the investigation of the site was not yet complete. In October 1990, the regional board issued a cleanup order with a deadline of June 30, 1992. However, when the responsible party did not meet this deadline, the regional board did not follow up on its order. Violations of cleanup orders should trigger a more serious enforcement action, such as assessing an administrative civil liability or referring the case to the attorney general.

In accordance with the contract terms of the state board's local oversight program, the oversight program agency described above sought guidance through the regional board, which issued the cleanup order in 1990. However, when asked why it had not pursued enforcement actions when the responsible party did not meet cleanup order requirements, the regional board stated, among other things, that it has devoted limited staff resources to the management of leaking storage tanks, partly because resources available to the oversight program agency have exceeded those of the regional board. Still, limited staff resources should not preclude the regional boards from assisting the oversight program agencies with their regulatory responsibilities.

Enforcement actions by both the regional board and the oversight program agency have failed to compel cleanup of a contaminated site.

Given the lack of follow-up enforcement by the regional board, the oversight program agency subsequently issued an order in October 1992, which required the responsible party to submit a corrective action plan by June 1, 1993. Then, in 1994, the responsible party finally prepared a work plan for a preliminary site assessment, suggesting it planned to clean up the contamination. However, for the past four years, the responsible party has not performed any cleanup activities. Despite the responsible party's unresponsiveness, the oversight program agency did not commence further enforcement action until September 1997. When we asked the oversight program agency why it did not take action sooner, the agency stated that, by the end of 1997, it was clear that the responsible party would never submit the final work plan for cleaning up the contamination. As late as November 9, 1998, the oversight program agency still had not moved forward with any enforcement actions. Instead, this agency stated that it has deferred action on this case because other cases have higher priority, and it believes prosecuting the responsible party would be time-consuming. Nevertheless, the fact remains that no one has yet fully determined the extent of the contamination, and cleanup has not occurred.

For the remaining six cases involving insufficient enforcement, because these boards or agencies were overly sensitive to legal disputes between current and former property owners, or to the responsible party's lack of funds for cleanup, they did not take enforcement actions against responsible parties that either failed to follow through on corrective action or delayed submitting requested information. In order to ensure consistent enforcement of the State's water quality laws, the regional boards and oversight program agencies must instead adhere to their established enforcement policies, which call for continuous follow-up on earlier enforcement steps and escalation of enforcement efforts, when it becomes clear that responsible parties are not fulfilling their obligations to clean up contaminated sites.

RECOMMENDATIONS

Because several regulatory entities help to ensure that the State's drinking water from groundwater sources is free from chemical contaminants, the following recommendations address the various entities that have roles in this process.

The California Environmental Protection Agency

To locate storage tanks without permits and that may contribute to contamination affecting drinking-water supplies, the California EPA should require the unified program agencies to increase their efforts to identify these storage tanks and should monitor the Unified Program's progress. Further, when evaluating the Unified Program, the California EPA should modify its existing procedures to include a review of cases involving leaking storage tanks and to determine whether the unified program agencies are adhering to established procedures.

The Department of Health Services

To ensure that public water systems promptly notify the State about threats to drinking-water supplies from public water systems and that the district offices and primacy agencies properly manage these threats, Health Services should take the following actions:

- Establish a process that will reconcile Health Services' information with that of the public water systems so that Health Services can verify it has received all sample results.

- Amend its regulations to require the electronic submission of laboratory results from either the public water systems or their contracted labs. In addition, electronically submitted lab results should be a condition of the laboratory certification process. The water systems and the laboratories should submit lab results to Health Services within a reasonable time, such as five days, after they have completed the analysis.

- Require its primacy agencies to report all water sample results from the small water systems so that Health Services can enter the results into its database.

- Make certain that its staff and local primacy agencies are aware of, and adhere to, established monitoring and reporting procedures for managing chemicals found in drinking water. Further, Health Services should no longer permit its staff to round off the numbers for maximum contaminant levels when determining whether a chemical has exceeded these levels and whether more stringent monitoring is required.

- Confirm that vulnerability assessments supporting reductions in the sampling frequency of water systems occur every three years and that staff document the evaluation of all criteria before granting these reductions.

To better ensure consistent enforcement of the State's water quality laws, Health Services should follow those key provisions of its existing policies and follow-up on all enforcement actions. When it becomes clear that a public water system is not cooperating with initial enforcement actions, Health Services should promptly escalate its actions.

The State Water Resources Control Board, the Regional Water Quality Control Boards, and the Local Agencies

To make certain that the State receives timely notification of threats to drinking water from storage tank owners and operators, and to improve the management of contaminated sites, local agencies, the state board, and the regional boards should take the following steps:

- Local agencies should use their existing enforcement authority to penalize storage tank owners or operators that delay reporting storage tank leaks.

- The state board should issue guidelines to the regional boards and oversight program agencies regarding consistently investigating and cleaning up MTBE detected in groundwater.

- For each contaminated site, the regional boards and oversight program agencies should closely monitor the submission of preliminary assessment reports by establishing case management tracking tools and performing timely follow-up when the appropriate boards or agencies do not receive the required information.

To better ensure the consistent enforcement of the State's water quality laws, the regional boards and the local agencies should follow key provisions of their existing enforcement policies that call for continuous follow-up on enforcement actions. If it becomes clear that a responsible party is not cooperating with initial enforcement actions, the appropriate board or agency should take a more stringent enforcement step. ■

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CHAPTER 2

The State's Regulatory Agencies Need to Share Information About Water Quality Problems More Effectively

CHAPTER SUMMARY

The State's designated regulatory entities do not always communicate effectively among themselves about gasoline contaminants in drinking water. As a result, the Department of Health Services (Health Services) may not receive prompt notification about contamination migrating towards drinking-water sources. Likewise, the State Water Resources Control Board (state board) and the Regional Water Quality Control Boards (regional boards) may not always receive timely notice that a leaking underground storage tank (storage tank) has affected a drinking-water supply.

Additionally, both Health Services and the state board are developing mapping databases known as geographical information systems (GIS), so regulatory agencies and the public can access information on drinking-water sources and potential contamination sites. However, because both agencies are working on GIS projects that will yield similar results, they are duplicating efforts and costs. Furthermore, although the Legislature requested the state board to lead the State's GIS project, Health Services should lead the effort instead because this database is key to Health Services' federally mandated assessment of risk to drinking-water sources from potential contaminating activities, such as leaking storage tanks and pipelines. Finally, before the GIS can be functional, the State must substantially improve databases on water quality and potential contaminating activities, such as leaking storage tanks.

REGULATORY AGENCIES DO NOT ALWAYS COMMUNICATE TO EACH OTHER ABOUT SIGNIFICANT WATER QUALITY PROBLEMS

To address drinking-water contamination quickly and effectively, the State must modify its existing practices for regulatory agencies to alert each other about gasoline leaks. Gasoline contaminants, more recently *methyl tertiary-butyl ether* (MTBE), have been responsible for the closure of numerous drinking-water wells. We examined documentation identifying the communication among those responsible for managing affected drinking-water supplies of Santa Monica, the Great Oaks Water Company in San Jose, and Sacramento's Fruitridge Vista Water Company and found that, in the several instances we reviewed, Health Services, the regional boards, and local agencies have failed to share information about contaminated wells or leaking storage tanks.

Ineffective Communication Delayed Contamination Notification and Cleanup

The lack of communication between Health Services and one regional board contributed to a nine-month delay in investigating MTBE contamination in Santa Monica.

The lack of communication between Health Services and one regional board contributed to a nine-month delay in the board's investigation of gasoline contamination affecting at least 50 percent of Santa Monica's drinking-water supply. In August 1995, the city detected MTBE in its Arcadia and Charnock wells at levels that exceeded the State's interim action level for MTBE of 35 parts per billion (ppb), that is, the level at which MTBE is not expected to adversely affect the public if found in drinking water. According to Health Services, on November 2, 1995, it received Santa Monica's annual monitoring results, which identified the presence of MTBE. However, Health Services states that it did not have the enforcement authority to require additional monitoring of MTBE or well closure because, as discussed on page 16 of this report, the State cannot enforce its interim action level for MTBE. Nonetheless, the city continued to monitor these wells on its own for the presence of MTBE, confirmed the initial detections, and notified Health Services of its findings on December 7, 1995.

According to Health Services, it initially asked Santa Monica to investigate the source of the contamination and to implement corrective measures at the contaminated sites identified during an annual inspection in August 1995. However, Health Services believes that due to the public's reaction to MTBE in the drinking-water supply, Santa Monica chose instead to remove the

wells from service. Ultimately, the city, not Health Services, contacted the regional board in May 1996 to initiate the investigation.

Early Detection of Contaminated Drinking Water Allowed Prompt Cleanup Efforts

In contrast to the delayed investigation and cleanup of the contaminated sites affecting Santa Monica's wells, quick responses to early warnings of MTBE contamination have prevented the contaminants from further endangering drinking-water supplies at other locations.

First, we found that the Great Oaks Water Company in San Jose identified MTBE in one well at a concentration level of 1.5 ppb in November 1997. A month later, the company confirmed concentrations of 1.6 ppb. Although Health Services requires public water systems to report all sample results, we were unable to locate these sample results in its database. Rather, we found that in January 1998, the Great Oaks Water Company sought guidance from its water wholesaler, the Santa Clara Valley Water District, which participates in the state board's Local Oversight Program. As a result of its participation in this program, the water district has the authority to oversee groundwater cases and was able to investigate immediately the source of the contamination and identify two potential responsible parties. Efforts to address the contamination began in February 1998.

Ideally Health Services should have notified a regional board of an MTBE-contaminated site; however, the regional board learned of the site from a newspaper article.

Similarly, Sacramento's Fruitridge Vista Water Company reported to Health Services in January 1998 MTBE concentrations of 14 ppb in one of its wells. When the appropriate regional board became aware of the affected well in May 1998, it took responsibility for investigating the source of the contamination. As in Santa Monica's case, Health Services did not require additional monitoring because MTBE is an unregulated chemical. Further, Health Services acknowledges that it lacks a formal process to communicate to the regional boards about detections of chemical contaminants in water supplies. Nevertheless, the regional board, after reading a May 1998 newspaper article on drinking-water wells affected by MTBE, requested samples at the company's well and confirmed the presence of MTBE at 20 ppb. In May 1998, the regional board began an investigation identifying five storage tank owners or operators that could be responsible for the contamination. Additionally, the regional board has

assisted the water company in applying for its reimbursement from the state board's Underground Storage Tank Cleanup Fund to install a new well.

THE STATE SHOULD COORDINATE EFFORTS TO ESTABLISH A GEOGRAPHIC MAPPING SYSTEM

To assess risks to drinking-water sources, the State plans to establish a geographic information system (GIS); however, the State will unnecessarily duplicate efforts and costs for the project because both Health Services and the state board are working on mapping systems that will yield similar results. A database displaying environmental geographic data, the GIS will allow the State's regulatory agencies and the public to access information on the location of drinking-water sources and any surrounding activity that could contaminate these sources.

In 1997, legislation was enacted requiring the state board to create pilot projects along with two local agencies, in part to work out the details for a GIS that will aid in protecting drinking-water sources. Further, by July 1, 1999, the state board will report to the Legislature on the feasibility and appropriateness of establishing such a mapping system.

However, we found that as a result of a 1996 federal mandate, Health Services is also developing a GIS to support the State's federally mandated Drinking Water Source Assessment and Protection Program. Under this program, the State must identify drinking-water sources and delineate adjacent protection, or capture, areas and zones. Then, the State must identify any activities within each protection area or zone that could be origins of significant contamination. Using this information, the State must perform a vulnerability assessment for each drinking-water source. Health Services believes that its final GIS will fulfill these federal requirements because it will include drinking-water source locations, protection areas and zones, and possible contaminating activities. Health Services believes that it will make the GIS available for public viewing, querying, and printing as early as the year 2000.

Health Services estimates that it will spend approximately $500,000 on its GIS, and the Legislature has allocated $400,000 to the state board for its mapping project. The ultimate goal of protecting the State's drinking-water supplies is the same for the respective GIS projects. To eliminate the duplication of efforts

Although Health Services and the state board are developing similar mapping projects, thus far the communication between them has been limited.

and costs, the two sponsoring agencies should orchestrate and integrate their efforts. Thus far, the communication between Health Services and the state board has been limited. Therefore, we are concerned that the State will spend an estimated $900,000, and these two agencies will spend much effort on mapping projects designed to meet their individual needs, rather than developing one GIS that can meet all of the State's needs.

To prevent unnecessary expenditures of time, efforts, and funds, Health Services, not the state board, should take the responsibility for establishing and maintaining the State's GIS because the GIS will assist Health Services in assessing the risk of contamination to approximately 16,000 drinking-water sources and accomplish the goals of its federally mandated Drinking Water Source Assessment and Protection Program.

EXISTING DATABASES REQUIRE SUBSTANTIAL IMPROVEMENTS BEFORE THE GIS CAN FUNCTION EFFECTIVELY

To ensure the success of its Drinking Water Source Assessment and Protection Program, the State needs to improve its existing databases so that the information transferred to Health Services' future GIS is accurate. An important element to success is Health Services' ability to incorporate accurate information about possible contamination from sources, such as mines, dairies, leaking storage tanks, and pesticides, into the mapping system. Therefore, each regulatory agency responsible for managing potential hazards to drinking-water sources must ensure the accuracy of its information and that Health Services can easily integrate this data into the GIS. These regulatory agencies include the State's departments of Toxic Substances Control, Pesticide Regulation, Food and Agriculture, as well as the regional boards, the Office of the State Fire Marshal, and the Integrated Waste Management Board.

During this audit, we found significant weaknesses in the existing database for tracking threats to drinking water from leaking storage tanks, the state board's Leaking Underground Storage Tank Information System (LUSTIS). This database does not always provide accurate or complete information because over the years, the regional boards and some local agencies have omitted, changed, or deleted leak and cleanup information that

the state board needs if it is to provide reliable data on the number of leaking underground storage tanks and the status of the State's cleanup efforts.

The state board's Office of Statewide Consistency (office) recently conducted audits for eight of the nine regional boards, that included a review of the LUSTIS database. The office identified inaccuracies in several reporting fields and in the information submitted by the local agencies to the regional boards. In addition, the office found cases that the system was not tracking. The office recommended that the regional boards correct all inaccuracies noted and overhaul their data entry and validation procedures. Furthermore, the regional boards were not reconciling their data with local implementing and oversight program agencies' data before the state board entered the data into the LUSTIS. When asked about the lack of reconciliation, the state board acknowledged such a reconciliation should take place and agreed to complete one by April 1999 and each April thereafter.

Before upgrading the database, the state board should first focus on correcting the existing deficiencies.

As part of the GIS provisions of the 1997 legislation discussed above, the state board is beginning to upgrade the LUSTIS by obtaining locations of drinking-water wells, coordinating with the two local agencies in its pilot studies to locate all underground storage tanks and those with known leaks, and coordinating with the Office of the State Fire Marshal (Fire Marshal) to enter into the database the locations of pipelines transporting motor vehicle fuel and their history of leaks. However, before upgrading the database, the state board should focus first on correcting the existing deficiencies in the LUSTIS that we discuss above, so that it will contain accurate data.

Finally, although the Legislature has required the state board to identify drinking-water wells and pipelines for its GIS project, the State can obtain this information in other ways. Specifically, once completed, Health Services' GIS will identify the State's drinking-water sources. Further, legislation already requires the Fire Marshal to develop a comprehensive database, compatible with GIS mapping, of each pipeline's location, age, and history of leaks and inspections.

RECOMMENDATIONS

To ensure that regulatory agencies are sharing information about drinking-water contamination, each regulatory entity should modify its existing practices and promptly communicate key information to other regulatory agencies. For example, Health Services could notify other regulatory agencies when a contaminant in a public water system reaches reportable levels. Likewise, the regional boards' notification process could begin when a storage tank owner or operator's preliminary assessment indicates that a contaminated site may imperil drinking-water sources.

Further, to establish a cost-effective and comprehensive geographical information system (GIS), the following actions should take place:

- The California Environmental Protection Agency should transfer to the Health and Welfare Agency, the agency where Health Services resides, the primary responsibility for establishing and maintaining this mapping system.

- To assist Health Services in its Drinking Water Source Assessment and Protection Program, as well as in the development of the GIS, all remaining regulatory entities responsible for managing potential hazards to drinking-water supplies must compile inventories of all possible contaminating sources. The inventories should list the locations of mines, landfills, and pesticide users in a format that Health Services can easily integrate into the GIS.

- Health Services should work cooperatively with the state board to make the best use of the information that both agencies have already gathered.

- The state board should focus on correcting the weaknesses in the Leaking Underground Storage Tank Information System (LUSTIS) before it upgrades this database to help ensure that the LUSTIS contains accurate information on the locations of storage tanks and identified gasoline leaks, and that Health Services can easily integrate this data into the GIS.

We conducted this review under the authority vested in the California State Auditor by Section 8543 et seq. of the California Government Code and according to generally accepted governmental auditing standards. We limited our review to those areas specified in the audit scope section of this report.

Respectfully submitted,

KURT R. SJOBERG
State Auditor

Date: December 17, 1998

Staff: Steven M. Hendrickson, Audit Principal
Joanne Quarles, CPA
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Jacque Conway, CPA
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APPENDIX

Public water systems provide water for human consumption through pipes or other constructed conveyances. The following is an overview of the various public water system classifications established by the State's Safe Drinking Water Act.

Public Water Systems

Community Water System	A community water system is a public water system serving at least 15 service connections used year-round by residents or regularly serving at least 25 year-round residents. Within this category, the law further classifies as small water system those community water systems serving from 15 to 199 service connections used yearlong by residents or those regularly serving at least 25 year-round residents.
Noncommunity Water System	*Nontransient-Noncommunity Water System* A nontransient-noncommunity water system, such as a school, labor camp, institution, or place of employment, is a public water system that is not a community water system and regularly serves at least 25 of the same persons over six months per year. *Transient-Noncommunity Water System* A transient-noncommunity water system, such as a school, labor camp, institution, or place of employment is a public water system that is not a community water system and that ***does not*** regularly serve at least 25 of the same persons over six months per year.
State Small Water System	A public water system serving at least 5, but not more than 14, service connections and ***does not*** regularly serve more than 25 people daily for more than 60 days out of the year.

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Agency's response to the report provided as text only:

California Environmental Protection Agency
555 Capitol mall, Suite 525
Sacramento, California 95814

December 10, 1998

Mr. Kurt R. Sjoberg
California State Auditor
555 Capitol Mall, Suite 300
Sacramento, California 95814

Thank you for the opportunity to review and comment on the California Environmental Protection Agency (Cal/EPA) draft report prepared by your office entitled "California's Drinking Water." Cal/EPA and the State Water Resources Control Board (SWRCB) have reviewed this draft, and the SWRCB comments from Mr. Walt Pettit, Executive Director, SWRCB, are attached.

I support Mr. Pettit's comments concerning the need for continued improvement in the effectiveness of the Underground Tank Storage (UST) program. I would add that the audit report should also recognize the many accomplishments of the program since 1984, specifically including the creation of the States Unified Hazardous Materials Management Regulatory Program (Unified Program) in 1993. The Unified Program has had a significant impact on the quality of program implementation for all of the environmental programs it affects, including the Underground Storage Tank Program. Today, we have 69 agencies certified as Certified Unified Program Agencies (CUPA's) that provide regulatory oversight for 98% of the businesses in California under the Unified Program. These CUPA's have significantly increased environmental regulatory capabilities statewide and have specifically enhanced the effectiveness of the UST program.

One of the new requirements for a jurisdiction to become a CUPA was the submittal of an application that ensured a program would operate with qualified personnel and an adequate commitment of resources. The placement of these requirements on jurisdictions, along with the routine evaluation of the programs by CAL/EPA evaluation teams, has significantly increased the effectiveness of the program statewide. In addition, to assure the continued improvement of the Unified Program, a Unified Program Administration and Advisory Group (UPAAG) composed of representatives from the CUPA's and State agencies, has been created.

Your report introduces and defines the role of the Unified Program and CUPA's on page 37. I recommend that this program description be expanded to include some of the information provided above and moved to the "Background" section at the beginning of the report. A better description of the program's accomplishments up front will more fairly portray the rising standards of program implementation.

Thank you again for the opportunity to comment on your draft report. If you have any questions regarding these comments or the Unified Program, please contact me at (916) 445-3846.

Sincerely,

Signed by:

Peter M. Rooney

Secretary for Environmental Protection
Kurt R. Sjoberg
December 10, 1998

Agency's response to the report provided as text only:

State Water Resources Control Board
901 P Street
Sacramento, California 95814

TO: Peter Rooney
Secretary for Environmental Protection
California Environmental Protection Agency

FROM: Walt Pettit
Executive Director
EXECUTIVE OFFICE

DATE: December 9, 1998

SUBJECT: RESPONSE COMMENTS TO THE BUREAU OF STATE AUDITS' DRAFT REPORT ON CALIFORNIA'S DRINKING WATER

State Water Resources Control Board (State Board) staff have reviewed the confidential draft Bureau of State Audits (BSA) report entitled "California's Drinking Water: Agencies Need to Provide Leadership to Address Contamination of Groundwater by Gasoline Components and Additives", dated December 1998. Our comments address recommendations pertaining to State Board and Regional Water Quality Control Board (Regional Board) activities. They do not address recommendations made by BSA to the Department of Health Services. We generally concur with the recommendations of the report, and suggest the following comments and responses:

GENERAL

We acknowledge that UST releases containing MTBE represent a significant threat to California's groundwater resources. The addition of MTBE to gasoline sold in California places new emphasis on the need for a more effective underground storage tank leak prevention program and timely investigation and cleanup of releases from underground tanks, particularly if MTBE or other non-BTEX components continue to be used.

While we agree that there is need for improvements in program effectiveness, the audit report should recognize the accomplishments over the past fourteen years of the agencies that actually implement the program — 107 local permitting agencies, 20 local oversight program contractors and 9 regional boards. Local agencies have overseen the removal of over 90,000 old tanks, and the number of locations at which tanks operate has dropped from approximately 60,000 in 1984 to about 22,000 today. This fact in itself has greatly reduced the number of sources that pose a risk of groundwater contamination. In addition, we note that Regional Boards and local agencies have completed work on over half of the 32,000 releases reported

to date, and that the ability to address the remaining and newly reported cases has improved dramatically during the past six years due to the availability of funds from the UST Cleanup Fund.

Given that the randomly selected cases reviewed by BSA constituted about 0.2% of the total caseload, caution should be used in extrapolating any conclusions to the universe of sites described above.

RESPONSES TO RECOMMENDATIONS

BSA Recommendation: To locate storage tanks that do not have permits and that may contribute to contamination affecting drinking water supplies, the California EPA should require the unified program agencies to increase their efforts to identify these storage tanks and monitor the unified program progress.

Response: We believe that the great majority of unpermitted tanks have been discovered and removed during the past fourteen years. However, we will discuss this subject with local agencies during future unified program coordination meetings and encourage sharing of ideas on ways to find any remaining unpermitted tanks. We will follow-up periodically to monitor progress on identifying these tanks.

BSA Recommendation: When evaluating the unified program agencies, California EPA should modify its existing procedures to include a review of cases involving leaking storage tanks and to determine whether the unified program agencies are adhering to established procedures.

Response: We have established an interagency team to address issues associated with the CUPA evaluation process. We will propose adding a review of leaking UST cases to the process at a future meeting.

BSA Recommendation: Local agencies should use their existing enforcement authority to penalize storage tank owners or operators that delay reporting storage tank leaks.

Response: We agree that release reporting and initial response is key to achieving the water quality protection goals of the UST regulatory program. We will provide a copy of the audit report to all local permitting agencies, and work with them to evaluate the causes and nature of reporting delays and to develop a plan for improving the release reporting timeframe and establishing an appropriate enforcement strategy.

BSA Recommendation: The State Board should issue guidance to the Regional Boards and oversight program agencies regarding the appropriate approach for investigating and cleaning up MTBE detected in groundwater.

Response: MTBE poses a significant challenge to water quality management, and we agree that there is a need for a consistent approach to investigating and cleaning up MTBE. The recent completion of reports by University of California, California Energy Commission, et al. will provide definitive peer reviewed information needed to develop guidance. We will proceed with developing a statewide policy on this subject.

BSA Recommendation: For each contaminated site, the Regional Boards and oversight program agencies should closely monitor the submission of preliminary assessment reports by establishing case management tracking tools and performing timely follow-up when the appropriate boards or agencies do not receive the information.

Response: We agree that once a release is reported the preliminary assessment should be conducted as soon as possible to allow the regulatory agency to establish the relative urgency of the case. This is especially true in cases involving MTBE. We will work with the regional boards and local agencies to develop a target timeframe for completion and review of preliminary assessments at newly reported cases and a method for tracking and evaluating whether this target is being achieved.

BSA Recommendation: To better ensure the consistent enforcement of the state's water quality laws, the Regional Boards and the local agencies should follow key provisions of their existing enforcement policies that call for continuous follow-up on enforcement actions. The boards and agencies need to assess whether the initial enforcement is producing the desired result. If it becomes clear that a responsible party is not cooperating with initial enforcement actions, the appropriate board or agency should take a more stringent enforcement step.

Response: We agree that enforcement should be continuous and progressive as needed to achieve the desired outcome. Improved compliance and enforcement has been a significant theme for the State and Regional Boards, especially over the last two years as 29 positions have been added to our overall budget for that purpose. We will work with the regulatory agencies to ensure that the existing policies are understood, and that roadblocks to timely enforcement are identified and addressed as appropriate.

BSA Recommendation: To ensure that regulatory agencies are sharing information about drinking water contamination, each regulatory entity should modify its existing practices and determine a critical point in which it will communicate key information to other agencies. The Regional Boards' notification process could begin when the preliminary assessment of the

contaminated site prepared by the storage tank owner or operator indicates that drinking water sources are in the vicinity of a gasoline leak.

Response: In response to AB 592 and SB 1189 (statutes of 1997) each Regional Board is now providing on a quarterly basis to all public water system operators within the region a list of discharges of MTBE that occurred during the quarter and a list of locations where MTBE was detected in the groundwater. This notification is based on initial sampling following storage tank excavation and provides information to public water system operators earlier than completion of the initial site assessment.

BSA Recommendation: To establish a cost-effective and comprehensive geographical information system (GIS), the following actions should take place:

1. The California Environmental Protection Agency should transfer to the Health and Welfare Agency the responsibility for establishing and maintaining this mapping system.

Response: AB 592 and SB 1189 (statutes of 1997) require the State Board to conduct a pilot study and by July 1, 1999 to report to the Legislature and the Governor on the feasibility and appropriateness of establishing a statewide GIS mapping system that will provide the appropriate information to allow agencies to better protect drinking water wells . The State Board will complete this task. It would then be appropriate for the Health and Welfare Agency (Department of Health Services) to take the lead in ensuring that a statewide GIS mapping system provides necessary information to protect drinking water wells. The State Board needs to ensure that a statewide GIS mapping system provides necessary information to manage the cleanup of storage tank release sites. The State Board and the Department of Health Services will work cooperatively to ensure that duplication of effort is avoided and that the efforts of both agencies are complementary.

2. To assist Health Services in its Drinking Water Source Assessment and Protection program as well as the development of the GIS, all remaining regulatory entities responsible for managing potential hazards to drinking-water supplies must compile inventories of their respective possible contaminating sources. The inventories should list the locations of mines, landfills, and pesticide users and should appear in a format that the GIS can easily integrate.

Response: Cal/EPA boards and departments will work cooperatively with the Department of Health Services to provide the locations of possible contaminating sources into a GIS format.

3. Health Services should work cooperatively with the State Board to make the best use of the information that both agencies have already gathered.

Response: The State Board and Department of Health Services staff are now working cooperatively to achieve this goal.

4. The State Board should focus on correcting the weaknesses in the Leaking Underground Storage Tank Information System (LUSTIS) before it upgrades this database. Fixing these weaknesses will help ensure that the LUSTIS contains accurate information on the locations of storage tanks and identified gasoline leaks and that the GIS can easily integrate this data.

Response: The State Board recognizes the need to correct the deficiencies in LUSTIS and to address new needs, such as tracking MTBE releases and establishing GIS compatibility, and has established a process to develop a workplan and timeline for achieving these goals.

Thank you for the opportunity to comment.

cc: Edward C. Anton, Chief
Division of Clean Water Programs

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Agency's response to the report provided as text only:

Department of Health Services
714/744 P Street
P.O. Box 942732
Sacramento, California 942344-7320

December 9, 1998

Mr. Kurt R. Sjoberg
State Auditor
Bureau of State Audits
555 Capitol mall, Suite 300
Sacramento, California 95814

Dear Mr. Sjoberg:

We have reviewed the draft report entitled "California's Drinking Water: State and Local Agencies Need to Provide Leadership to Address Contamination of Groundwater by Gasoline Components and Additives," and provided the enclosed responses. We appreciate the professionalism of your staff in preparing the report.

Should you have any questions about the responses, please call me at (916) 322-2308.

Sincerely,

Signed by:

David P. Spath, Ph.D., P.E., Chief
Division of Drinking Water and
Environmental Management

The department attached to this response a copy of a 1990 compliance order issued to the United States Army, Presidio of San Francisco as stated on page R-10. We have not included this attachment, however, a copy is available on request from the California State Auditor.

CALIFORNIA'S DRINKING WATER REPORT
PREPARED BY THE STATE BUREAU OF AUDITS

The following responses are provided by the Department of Health Services (Department) to the comments prepared by the State Bureau of Audits in the draft report entitled "California's Drinking Water."

SUMMARY

Page 3, Comment: Although the State of California (State) has ample evidence that gasoline leaking from underground storage tanks is jeopardizing the safety of our drinking water supplies, the State has not acted quickly and decisively to address the potential health hazard. Officials from Health Services became aware as early as 1990 that MTBE was contaminating drinking-water wells within California; however, Health Services did not establish regulations to test for MTBE in drinking water until 1997. In addition, Health Services did not adopt interim emergency regulations even though it has the authority to do so.

Response: The Department believes that over the past two decades it has taken prudent measures to determine the occurrence of gasoline contamination in drinking water sources and has adopted appropriate monitoring and water quality regualtions for these contaminants in a manner that is protective of public health. Since 1980, the Department has undertaken numerous monitoring programs to determine the occurrence of organic chemical contaminants such as MTBE in drinking water supplies. The most significant program was the implementation of Assembly Bill (AB) 1803, which became law in 1983 and required that all drinking water from community water system wells throughout the state be tested for organic compounds including gasoline contaminants. This program was carried out between 1984 through 1989. The results from the AB 1803 monitoring program disclosed no evidence of MTBE in these drinking water wells although other gasoline contaminants were identified such as xylenes and benzene, a known human carcinogen . As a consequence of these findings, in 1990, the Department adopted monitoring requirements and drinking water standards for 22 organic chemicals. At the same time that the Department established these monitoring requirement, water systems were also requested to report any unregulated chemicals that they detected as a result of this monitoring. This approach although voluntary has worked well in alerting the Department to the presence of new contaminants, which may become potential problems statewide. In fact, it was through this process that the City of Santa Monica notified the Department that MTBE had contaminated several of the City's drinking water wells.

The State Auditor's Report indicates that the Department became aware as early as 1990 that MTBE was contaminating drinking-water wells within California. The Auditor's
(1)* Report appears to imply that this was widespread contamination unique to MTBE. However, the wells to which the Auditor's Report refers were two wells located at the Presidio in San Francisco. In 1990 the Department assumed regulatory authority over the Presidio's water system and required a complete monitoring of the Presidio's potential drinking water supplies. The results of the monitoring are contained in the attached

*California State Auditor's comments on this response begin on page R-19.

compliance order. As indicated the two wells showed contamination by several organic chemical contaminants two of which, 1,2 -Dichloroethane (1,2-DCA) and MTBE, are associated with gasoline contamination. These wells were not approved as drinking water sources by the Department. Given that the groundwater was contaminated by a myriad of contaminants the Department reasonably concluded that the finding of MTBE was not unique and the groundwater contamination could be coming from several potential sources.

The Auditor's Report concludes that the Department should have established a regulation requiring monitoring for MTBE prior to 1997 and the regulation should have been adopted as an emergency regulation . As indicated above the Department did not have any data to indicate that MTBE was becoming a potential contaminant problem in drinking water wells until the City of Santa Monica's notification in the fall of 1995. Although the Department did contemplate an emergency unregulated chemical monitoring regulation it did not believe that such a regulation would meet the requirement for an emergency regulation pursuant to the Administrative Procedures Act. The Auditor's Report concludes that an emergency regulation was justified to immediately preserve the public health and safety. The Auditor's Report appears to base this conclusion on the fact that MTBE was potentially more of a threat to contaminate drinking water than other gasoline contaminates and that the chemical was an animal carcinogen and, therefore, a possible human carcinogen. The Department agrees that MTBE's chemical properties make it a greater threat to contaminate groundwater than other gasoline contaminates. However, except for the Santa Monica situation, there was no evidence to indicate widespread contamination was occurring. With regard to the carcinogenicity issue, although the federal Environmental Protection Agency (EPA) has indicated that studies show MTBE to be an animal carcinogen, those studies were based on inhalation exposure. The evidence at the time did not support the conclusion that MTBE was an animal carcinogen when ingested in drinking water. In fact, that issue will not be resolved until the Proposition 65, Science Advisory Committee meets this month to decide if MTBE should be listed as a carcinogen. Therefore, the Department still believes that an emergency regulation could not have been justified and the approach taken, recommending that water systems to begin monitoring prior to the adoption of a monitoring regulation and following the normal regulation adoption process, was a prudent one. (2)

The Department would also like to point out that the approach the Department took had the intended effect. As indicated by Figure 2 in the Auditor's Report, more than 2000 drinking water sources were sample prior to the adoption of the monitoring regulation. This action demonstrated the willingness of the water utility industry to work cooperatively with the Department and the importance that they place on the Department recommendations. To date, the Department's records show only 61 confirmed drinking water sources out of a total of 4,566 sources that show contamination with MTBE. This figures disagrees with the draft Auditor's Report which indicates on page 28 that 533 drinking water sources show MTBE contamination. We assume that the State Auditor included those sources for which the result was reported as "less than" the analytical

detection limit. We understand the possible confusion since one could interpret this
(3) result as an MTBE detection but at a level below which the chemical cannot be accurately measured. However, this interpretation is incorrect. A result reported as "less than" means that the chemical was not detected.

Page 4, Comment: In addition, Health Services and the state and regional boards are not making certain that those responsible for detecting and cleaning up chemical contamination affecting drinking-water supplies are doing their jobs. Not only does the State regulate underground storage tanks ineffectively, but it has also failed in some instances to enforce aggressively the State's Safe Drinking Water Act and the laws governing underground storage tanks.

Response: The Department of Health services issued 239 citations and 26 compliance orders in 1997 and 186 citations and 17 compliance orders in 1998 for violations of the California Safe Drinking Water Act . We agree with the State Auditor's that violations should be pursued aggressively and we believe the number of citations the Department has issued support this position. We will continue to take measures to ensure that all instances of violations are enforced. We will also seek to resolve issues relating to turn around time for receipt of laboratory data.

RECOMMEDATIONS

Page 6, Comment: The Department of Health Services needs to do the following to manage threats to drinking water systems:

Comment: Strengthen its process for promptly obtaining and analyzing laboratory results from all public water systems so that Health Services can quickly notify other agencies when threats to drinking water occur.

Response: Although the Department agrees with the State Auditor on strengthening this process, and is in fact already taking steps to do so, legislation may be required to implement this process, if it cannot be accomplished administratively.

Comment: Ensure that it assesses the safety of water from a public water system at least once every three years as required.

Response: The Department agrees with the State Auditor that assessments should be conducted pursuant to requirements.

Comment: Consistently enforce the State's water quality laws by following up on enforcement actions taken by the district offices and the local agencies.

Response: The Department issued 239 citations and 26 compliance orders in 1997 and 186 citations and 17 compliance orders in 1998. We agree with the State Auditors that all enforcement actions should be followed up. We will continue to take measures to

ensure that all enforcement actions are pursued.

Comments: Take the lead in establishing a geographical information system (GIS) that will fulfill requirements for the federally mandated Drinking Water Source Assessment Protection Program, help the State monitor risks to drinking-water sources, and serve as a means for state and local agencies to exchange information about these risks.

Response: The Department is in the process of developing a GIS that will fulfill the requirements of the Drinking Water Source Assessment Protection Program. If the Department is to expand its role as the State Auditor's suggest a substantial increase in resources will be required. (4)

THE STATE'S REGULATORY PROCESS FOR ENSURING SAFE DRINKING WATER

Page 13, Comment: However, the division remains responsible for providing the oversight, assistance, and training to the primacy agencies, which regulate 2,283 small public water systems.

Response: The 2,283 small water systems referenced above include community and non-community, non-transient water systems that are subject to monitoring for organic chemical contaminants. This figure does not represent the non-community water systems regulated by the primacy agencies. (5)

THE STATE HAS TAKEN A "WAIT AND SEE' APPROACH TO DEALING WITH MTBE CONTAMINATION

Page 23, Comment: The State must follow a lengthy protocol when determining the risk factors associated with contaminants in drinking water, and inconclusive scientific information can hinder the State's efforts to formulate policies that apply to a particular contaminant. Nonetheless, the State's Department of Health Services (Health Services) and the State Water Resources Control board (state board) had sufficient information and opportunities to deal aggressively with contamination of water sources by MTBE. Health Services and the state board could have responded to available information on the potential health effects of MTBE and the differences noted between MTBE and the gasoline components benzene, toluene, ethyl benzene, and xylenes, commonly called BTEX, when these chemicals are exposed to groundwater. Ultimately, the Legislature has had to take the lead on the issues surrounding MTBE by requiring Health Services to adopt primary and secondary drinking-water standards for MTBE and by calling for studies on MTBE's effect on human health as well as analyses of possible alternatives to MTBE's use in gasoline.

Response: The Department addresses the above issue in the first response although it should be noted that the Department supported the legislation to develop secondary and primary drinking water standards for MTBE.

Page 24, Comment: The interim action level is the amount of MTBE that researchers expect would adversely affect the public health if the amount occurred in drinking water.

Response: The definition is incorrect. The interim action level is the amount of MTBE that
(6) researchers would not expect to adversely affect the public health if the amount occurred in drinking water.

THE STATE WAS LATE ADOPTING EMERGENCY REGULATIONS FOR MONITORING MTBE

Page 27, Comment: Given the chronology of warnings described above, we believe that Health Services had sufficient evidence on or before February 1996 to adopt emergency regulations for MTBE instead of issuing the advisory to public water systems. Under the provisions of the State's Safe Drinking Water Act, Health Services may adopt a regulation as an emergency if the regulation is necessary for the immediate preservation of the public health and safety. Emergency regulations adopted by Health Services would have been exempt from the normal review and approval process and would have become effective once filed with the Secretary of State. Further the regulations could have remained in effect up to 180 days, thus affording Health Services ample time to complete the public notice process for adopting permanent regulations.

Response: The Department has responded to this issue in its first response. The length
(7) of time the State Auditor's Report has for the duration of the emergency regulations is in error it should be 120 days rather than 180 days.

Page 28, Comment: When asked why it did not adopt regulations sooner, Health Services stated that, although it considered adopting emergency regulations to establish monitoring requirements for MTBE, it concluded that the MTBE contamination identified at the City of Santa Monica's wells was not an emergency as defined by the State's Administrative Procedures Act. We do not agree, this act, like the State's Safe Drinking Water Act, specifies that an emergency is an event that calls for the immediate preservation of the public health and safety.

(8) Response: See first remarks. This statement does not reflect the Department's position.

EXISTING PROCEDURES NEED TO ENSURE WATER SYSTEM'S EARLY SUBMISSION OF LAB RESULTS

Pages 40-43, Comment: Health Services does not ensure that all public water systems required to submit lab results to the State have in fact submitted the data from their water quality sampling. Also, because Health Services does not require electronic reporting of sample results, Health Services experiences delays in receiving 28 percent of the sample results. Finally, Health Services does not include in its database the sample results it receives from 4,600 small water systems. Until Health Services modifies its existing policies and procedures for tracking information on water quality monitoring, the State

cannot ensure that all sample results are available for its timely evaluation of potential threats to drinking water.

Response: The Department is reviewing its data management procedures and will initiate necessary changes to ensure timely receipt, review and evaluation of data.

Page 41, Comment: For the 14 labs responding to our survey, we found that 35 percent of the water analysis data submitted by the labs for these public water systems did not appear in Health Services' database.

Response: The Department is reviewing its database and will implement procedures to ensure that the data appears in the database.

Page 41, Comment: Secondly, we question Health Services' policy of allowing the public water systems to submit water analysis results 10 days after the month in which the systems collected the samples. Although water sample results exceeding the maximum contaminant level must be reported within 48 hours to the district offices, for the remaining water sample results, Health Services could be unaware of contamination trends for up to 41 days, if we assume the water systems have submitted the results promptly.

Response: The Department will review the procedures for reporting water analysis results and make changes, if necessary.

SOME PRIMACY AGENCIES AND DISTRICT OFFICES DO NOT FOLLOW STATE POLICIES FOR ENSURING WATER QUALITY

Page 45, Comment: As a result, public water systems throughout the state are subject to different monitoring and reporting requirements.

Response: The Department agrees monitoring requirements should be the same and we will review our current policies and procedures to ensure uniformity.

Pages 45 and 46, Comment: In another case, a district failed to adhere to the established sampling protocol for treated drinking-water sources. Chemical analysis of the water prior to treatment, over an eight-year period ending in May 1997, showed levels of benzene in the water supply that averaged 2.6 ppb.

Response: The Department agrees with the State Auditor's Report that policies and procedures should be uniform. We will review existing policies and procedures and make necessary changes.

Page 47, Comment: In these nine instances, we were unable to determine justifications for reductions in the sampling frequencies. Nevertheless, in order for Health Services to protect drinking-water sources adequately, it must ensure that its staff and primacy

agencies adhere to established procedures.

Response: The Department agrees with the State Auditor's Report that staff should adhere to established procedures. We will take measures to ensure that established procedures are adhered to.

PUBLIC WATER SYSTEMS HAVE NOT RECEIVED PENALTIES FOR VIOLATING WATER QUALITY LAWS

Pages 50 and 51, Comment: In 7 of 39 sample cases, we found that Health Services or primacy agencies did not sufficiently penalize public water systems that did not comply with sampling or public notification requirements.

Response: The Department issued 239 citations and 26 compliance order to PWS in 1997 and 186 citations and 17 compliance orders in 1998. We agree with the State Auditors that all enforcement actions should be aggressively pursued. We will review the enforcement policy and take measures, where necessary, to ensure consistency.

RECOMMENTATIONS

Page 57, Comment: Health Services should take the following actions:

Page 57, Comment: Establish a process that will reconcile Health Services' information with that of the public water systems so that Health Services can verify that it has received all sample results.

Response: The Department is in the process of implementing changes in its data system to reconcile sample results.

Page 57, Comment: Amend its regulations to require the electronic submission of laboratory results from either the public water systems or their contracted labs. In addition, the electronic submission of lab results should be a condition of the laboratories certification process. The water systems and the laboratories should submit lab results to Health Services with a reasonable time, such as five days, after they have completed the analysis.

Response: The Department agrees that electronic submission of data is more efficient and will examine the possibility of amending its regulations to facilitate receiving data electronically and in a timely manner.

Page 57, Comment: Require its primacy agencies to report all water sample results from the small water systems so that Health Services can enter the results into its database.

Response: The Department agrees that having all results in its database is desirable. Although the augmentation of the database may require substantial resources, we are

beginning the process to obtain the small water system water quality data from the primacy agencies. It should be noted that the USEPA requires that only sample results exceeding drinking water standards be reported.

Page 57, Comment: Make certain that its staff and local primacy agencies are aware of and adheres to established monitoring and reporting procedures for managing chemicals found in drinking water. Further, Health Services should no longer permit its staff to round down the numbers for maximum contaminant levels when determining whether a chemical has exceeded these levels.

Response: The Department intends to notify staff of the need for uniformity in monitoring and provide training to staff and local primacy agencies. The Department does not agree with the recommendation on rounding down. The position in the Auditor's Report is not supported by the science. (9)

Page 57, Comment: Confirm that vulnerability assessments supporting reductions in the sampling frequency of water systems occur every three years and that staff document the evaluation of each criterion before granting these reductions.

Response: The Department agrees that the vulnerability assessments follow the required procedures. We will take measures to ensure that process occurs.

Page 60, Comment: The state's designated regulatory entities do not always communicate effectively among themselves about the presence of gasoline contaminants in drinking water.

Response: The Department is committed to improving communication with other regulatory agencies and will develop policies or procedures necessary to do so.

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COMMENTS

California State Auditor's Comments on the Response From the Department of Health Services

To provide clarity and perspective, we are commenting on the Department of Health Services' response to our audit report. The numbers correspond to the numbers we have placed in the response.

(1) The department mischaracterizes our statement on MTBE contamination on drinking-water wells in 1990. We clearly state on page 17, that the State was aware as early as 1990 that MTBE affected two of the Presidio of San Francisco's drinking-water wells.

(2) In disputing our conclusion that it should have acted earlier to regulate MTBE, the department continues to disregard other relevant factors, such as increases in the State's use of MTBE and in the number of storage tanks leaking petroleum containing MTBE into the groundwater, which are discussed on pages 17 and 18. Further, we acknowledge that inconclusive scientific information can hinder the State's efforts to formulate policy. However, the department adopted regulations in 1997 using relatively the same scientific information that was available to it in 1996 when it issued the MTBE advisory. Therefore, as stated on pages 1 and 18, we believe that the department had ample evidence on or before February 1996 to adopt emergency regulations instead of simply issuing its advisory.

(3) The department is correct. We responded to the department's point by changing the text of our report.

(4) As discussed on page 45, if the department leads the geographical information system (GIS) project, resources currently available to it and to the State Water Resources Control Board can be spent in a manner that avoids the duplication of costs and efforts.

(5) We are not clear on the distinction the department is attempting to make. The 2,283 small water systems discussed on page 8 are composed of both community water systems and noncommunity-nontransient water systems. Perhaps the department is attempting to highlight the fact that noncommunity-transient water systems have been excluded because they are not subject to its water quality monitoring regulations for organic chemicals, such as gasoline contaminants.

(6) The department is correct. We responded to the department's point by changing the text of our report.

(7) The department is incorrect. As stated on page 18, the provisions of the State's Safe Drinking Water Act, specifically Section 116377 of the Health and Safety Code, allow emergency regulations adopted by the department to remain in effect for up to 180 days.

(8) The department is incorrect. The department made this statement, which was included in a report on groundwater protection prepared by the California Environmental Protection Agency and submitted to the Joint Legislative Audit Committee.

(9) The department is correct that we did not use "science" to arrive at our conclusion. However, in our opinion, it was not necessary to apply science to arrive at the conclusion presented on page 30; that is, the policy does not stress the importance of the maximum contaminant level and stringent monitoring requirements the department established to protect the quality of the State's drinking water.