

California Tank Program More Protective
The Proof Is In the Improvements and the Performance
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Foreword

Since the Governor's decision to phase out MTBE from California's gasoline, the predictions of continued massive pollution of drinking water in California have not occurred. Instead there has been a decline in reported leaking underground storage tanks, fewer claims against the California Underground Storage Tank Cleanup Fund Program and a decline in reports in drinking water detections (not the "tip of the iceberg" effect predicted by some). So why this turn around? The evidence points to a vastly improved California underground storage tank (UST) program.

California has a unique way of administering and enforcing its UST program. State law establishes the authority for regional or local agencies to assume administration and enforcement responsibilities. There are over 100 of these individual UST agencies throughout California and all report to their individual governing bodies, not to the State Water Resources Control Board (SWRCB). The SWRCB is the UST rulemaking authority but the local/regional UST agencies may develop their own requirements as long as they do not require physical changes to UST facilities beyond those required by State and/or federal UST programs. Such proposed physical changes to facilities or UST systems must be submitted to the SWRCB for approval.

California UST Program Improvements

There are broad, programmatic variations between the aforementioned local agency resources and abilities to enforce. The most effective and uniform way to strengthen the CA UST program was to mandate more specific and onerous controls on the UST population as a whole. This was accomplished under the passage into law of SB 989. These significantly more protective legislative CA UST program enhancements include:

- Annual Inspections – The new UST agency inspection requirement is once per year. The state mandated agency inspection frequency was originally every three years. Under the new annual inspection requirement, where agency resources are limited, a UST permit holder may be required by the local agency to employ a qualified special inspector to comply. This is probably the single most effective change in California's UST program, and will better assure compliance with existing and new program requirements.
- Enhanced Leak Detection for USTs Near Drinking Water Wells – To further protect California's drinking water sources, enhanced leak detection (ELD) is mandated for all UST systems that have single-walled components and are located within 1,000 feet of a drinking water well. UST owners/operators notified by the SWRCB that their facilities are subject to ELD must implement such a program within 18 months of being notified and then every three years thereafter. As part of this effort, all public drinking water wells as well as USTs and leaking USTs have been plotted into an interactive Geographic Information System (GIS) available on a public website [<http://geotracker.llnl.gov/>].
- Under Dispenser Containment – California has required "under dispenser containment" (UDC) for some, time but due to some confusion in both the agency and regulated communities, the

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requirement has not been fully implemented. Depending on the potential threat to drinking water, UDC is required in the near term for older facilities within 1,000 feet of public drinking water wells and at all other UST sites by the end of 2003.

- Training for Installers, Service Technicians, Inspectors & Owners/Operators – While the California UST program has always required certain training and experience for UST system installers and service technicians, there are now more comprehensive training requirements with periodic refreshers. Of particular importance is an entirely new requirement for the training of UST owners and operators to assure their understanding of the regulations and how various sophisticated UST system components operate.
- Secondary Containment Testing – As the secondary means of controlling releases from failed UST systems, secondary containment is now subject to integrity testing with an initial test based on the age of the UST system, and then at least every three years thereafter. Secondary containment systems that cannot be tested must initially employ ELD then eventually replace them with testable systems.
- Annual Testing of Leak Detection Sensors & Alarms – Given the unacceptable rate at which leak detection systems have lacked maintenance, have been tampered with or have been disabled in the past, the new law requires all such systems and alarms to be tested on an annual basis. This better assures the more timely and near term detection of releases from failed UST systems.
- Increased Certification/Licensing Requirements – As improper installation and repair have been a documented problem in the past, the certification and licensing requirements for those contractors installing, calibrating and maintaining UST systems have become more stringent and comprehensive.
- Criminal Penalties for Intentional Tampering With or Disabling of Leak Detection Equipment – In response to the significant rate at which UST system monitoring records have been modified and leak detection systems have been tampered with or disabled, the law has increased the civil and/or criminal penalties for such illegal activities to include significant fines and possible jail time.
- Increase in Maximum Leaking UST Fund Claims from \$1.0 million to \$1.5 million – In anticipation of the U.C. MTBE study forecasts of increased costs of cleaning up gasoline containing MTBE at leaking UST sites, the law has increased the maximum amount for each claim against the Fund from \$1.0 million to \$1.5 million .

UST Program Research/Investigations

Three studies mandated by SB 989 that should lead to further California UST program and systems improvements:

- Remaining Non-Upgraded Tanks – The first of the three studies to be completed determined that between 2,000 and 5,000 California USTs have yet to be upgraded or closed, but most are likely inactive due primarily to the “Upgrade Certificate Program.” This program requires an upgrade certificate in order to accept delivery of product. The multi-disciplined work group submitted a list of problems and recommendations for consideration by the CalEPA Secretary in January 2001. A specific recommendation is for the SWRCB to be authorized enforcement

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over the California UST program where individual local agencies are not enforcing consistent with law and regulations.

- Local UST Agency Enforcement Authorities – A panel of local agency and regional board representatives are currently reviewing existing enforcement authorities and procedures. They will advise the SWRCB of any necessary changes to enable local agencies to take more effective and adequate enforcement action against owners and operators of noncompliant UST facilities. The panel will file its recommendations on or before September 30, 2001.
- Causes & Sources of UST System Failures – The SWRCB is conducting a field-based research program to quantify the probability and environmental significance of releases from UST systems meeting the 1998 upgrade requirements. The research program will: (a) identify the source and causes of releases and any deficiencies in leak detection systems, (b) evaluate single-walled, double-walled, and hybrid tank systems, and avoid bias toward known LUSTs by including a statistically valid sample of all operating UST systems, and (c) utilize peer review. The research program will be concluded, and the results thereof published, on or before June 1, 2002. The results will be used to develop appropriate changes in design, construction, monitoring, operation, and maintenance requirements for UST systems.

Near Term UST Improvement Impacts

Since the issuance of Governor Davis's Executive Order to phase out MTBE, there has been a decline in the number of LUSTs, fewer claims against the California LUST Cleanup Fund and a leveling out (no "iceberg" effect) of detections in drinking water sources. This points to more effective release prevention in the UST program. What near-term improvements have been made?

It may be premature to attribute these improvements in UST performance to the aforementioned legislative changes although the annual inspections that began in 2000 may be partially responsible. It should also be remembered that a large population of substandard tanks were either closed or upgraded by the end of 1998. As of March 2001, the SWRCB reported that 94% of California's USTs meet the upgrade requirements. The SWRCB also estimated that 92% of USTs in the state are now fitted with approved leak detection equipment (Table 1.).

Table 1. CA UST Statistics

Number of Petroleum Fuel USTs	42,501	90.5%
Number of USTs Upgraded	44,035	93.7%
Hazardous Substance USTs	4,469	9.5%
Number of USTs with Leak Detection	43,156	91.9%
Total Active USTs	46,970	

[Jan – Mar 2001 CA UST Status Report]

The publicity surrounding gasoline and MTBE contamination problems, and the hypothesized costs of clean up have resulted in greater attention toward potential significant UST failure liabilities. This heightened awareness in the near term has caused more effective enforcement and enhanced motivation for UST program compliance. Along with the elimination of many substandard UST facilities at the end of 1998 (per the federal and California UST upgrade requirements), this increase awareness has resulted in a decline in reported LUSTs (Table 2) and fewer claims against the LUST Cleanup Fund Program (Table 3).

It must be pointed out that applications coming into the LUST Cleanup Fund are typically delayed by the processes necessary to investigate and develop an approved remediation plan

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prior to the submittal of claims. The claims are scrutinized by the Fund Staff prior to the approval of funds through the issuance of a Letter of Commitment (LOC). The submission of a claim can be more than one year after the discovery of the contamination.

Table 2. CA LUST Information	12/31/98	1stQtr99	2ndQtr99	3rdQtr99	4thQtr99	1999		
Total LUST cases open	16,127	15,936	15,850	15,783	15,995			
Total LUST cases closed	18,033	18,589	19,212	19,530	20,113			
Total LUST cases	<u>34,160</u>	<u>34,525</u>	<u>35,062</u>	<u>35,525</u>	<u>35,896</u>			
Number of New LUST sites	-	365	537	463	371	1,736		
Number of LUST Cases Closed	-	191	623	318	583	1,715		
Net Open(+)/Closed(-) LUST cases	-	+174	-86	+145	-212	+21		
	1stQtr00	2ndQtr00	3rdQtr00	4thQtr00	2000	1stQtr01	2001*	
Total LUST cases open	15,718	15,550	15,345	15,167		15,109		
Total LUST cases closed	20,438	20,894	21,281	21,660		21,881		
Total LUST cases	<u>36,156</u>	<u>36,444</u>	<u>36,626</u>	<u>36,827</u>		<u>36,990</u>		
Number of New LUST sites	260	288	182	201	931	163	708	
Number of LUST Cases Closed	325	456	387	389	1,557	221	1,381	
Net Open(+)/Closed(-) LUST cases	-65	-168	-205	-188	-626	-58	-673	

* Projection for the year 2001 based on the reporting rate of the two preceding years
[CA LUSTIS Quarterly Reports]

Table 3. CA LUST Cleanup Fund Program Information

Fiscal Year	91-92	92-93	93-94	94-95	95-96	96-97	97-98	98-99	99-00	00-01
Claims Received	6,271	1,118	1,077	1,582	1,388	709	743	1,229	1,193	945

[CA LUST Fund Update]

While some contend that even the new and upgraded UST systems are leaking, there is little credible forensic evidence that proves such contamination did not occur prior to the upgrade, or did not migrate from other sources.

The vast majority of noncompliant tanks are most likely out of service. This is primarily due to California's UST Upgrade Certificate Program. This program precludes the delivery of product to tanks that do not have an Upgrade Certificate and supporting documentation.

Admittedly, there are some tanks that have been upgraded but are leaking without detection due to lack of maintenance or disconnection of leak detection devices and alarms. Many of these systems are now being discovered, but at substantially lower rates than before the upgrade deadline. Other matters to be addressed include equipment integrity, proper installation, required maintenance and operation in compliance with the new regulations. Increased licensing/certification and training requirements for contractors should further reduce the incidence of failed UST systems.

There are also allegations that gasoline vapors containing MTBE leaking from vapor control systems at gasoline dispensing facilities are contributing to groundwater contamination. First, it must be recognized that should this phenomena be confirmed, contamination via vapor should lead to fairly localized contamination. Second, these vapor control systems are subject to another set of regulations requiring vapor-tight systems. If such systems are leaking vapors, they are probably violating air quality regulations. These systems are required to be periodically tested to assure continued vapor-tight status.

Concluding Remarks

There have been numerous hyperbolic projections in California, and nationwide, concerning the purported “tip of the iceberg” effect of gasoline containing MTBE further contaminating drinking water sources. These projections have not materialized.

While there are still some continuing LUST incidents, the jury is out as to whether these are from past releases, or from the failure of upgraded or new UST systems. Given past problems associated with UST program enforcement, a review of the SWRCB records demonstrate that there has been an obvious turnabout leading to a more protective UST program in California. This includes greater compliance among those interested in protecting their businesses and assets, and improved enforcement by the relevant agencies.

The bottom line is that reports of LUSTs are in decline, claims against the California LUST Cleanup Fund are in decline, and reports of MTBE detections in groundwater-based drinking sources are in decline (Table 4). The risk of MTBE to the environment was overstated in the U.C. MTBE study and, in reality, has been drastically reduced. The remaining issue of retaining MTBE in California gasoline versus assured gasoline supply problems and unavoidable price increases is -- one of political and public perception.

The California Energy Commission (CEC) has projected a gasoline supply problem and increased cost of producing MTBE-free gasoline in California regardless of whether an oxygen waiver is granted. Gasoline containing MTBE makes up an estimated 11 volume percent of California gasoline. Any loss of MTBE must be replaced with alkylates and ethanol. Without ethanol, alkylates, a cleaner burning gasoline component of gasoline, must be substantially increased. As alkylates are in great demand in other reformulated gasoline areas, it will be difficult to obtain sufficient quantities for California.

With the USEPA denial of California’s request for a waiver from the oxygen requirement for reformulated gasoline, the Governor has requested the CalEPA to conduct a 90-day evaluation of the situation. This is an excellent opportunity to assess whether the basis of the Governor’s decision to phase out MTBE from California’s gasoline is still merited. Based on the data regarding improvement to California’s UST program and decreased incidents of drinking water contamination, it is time for such a reassessment.

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Table 4. **California Public Water Systems MTBE Monitoring Data – May 1997 through July 2001**

	05/12/97	06/18/98	05/25/99	07/19/99	08/20/99	10/22/99	11/19/99	01/07/00	02/09/00	03/07/00	07/03/00	01/03/01	03/02/01	06/04/01	07/20/01
Systems Sampled for MTBE	352	671	1092	1150	1191	1336	1426	1444	1549	1559	1718	1901	2073	2350	2350
Additional Systems Sampled	0	319	421	58	41	145	90	18	105	10	159	183	172	277	0
Percent of Total Systems	0%	14%	23%	25%	25%	29%	30%	31%	33%	33%	35%	39%	42%	48%	48%
Total Systems	4418	4681	4681	4681	4681	4681	4681	4681	4681	4681	<u>4900</u>	<u>4900</u>	<u>4900</u>	<u>4900</u>	<u>4900</u>
Systems Reporting Detections	15	25	40	47	33	36	36	30	32	32	32	37	41	44	44
+ / - Additional Detections	0	10	15	7	-14	3	0	-6	2	0	0	5	4	3	0
Percent of Total Systems	0.34%	0.53%	0.85%	1.00%	0.70%	0.77%	0.77%	0.64%	0.68%	0.68%	0.65%	0.76%	0.84%	0.90%	0.90%
Sources Sampled for MTBE	1868	3173	5389	5688	5789	6140	6409	6492	6684	6725	7144	7764	8049	8559	8565
+ / - Additional Sampled	0	1305	2216	299	101	351	269	83	192	41	419	620	285	510	6
Percent of Total Sources	17%	27%	46%	48%	49%	52%	54%	55%	56%	57%	61%	66%	68%	73%	73%
Total Sources	11000	11800	11837	11837	11837	11837	11837	11837	11837	11837	<u>11800</u>	<u>11800</u>	<u>11800</u>	<u>11800</u>	<u>11800</u>
GW Sources Sampled	N/A	N/A	5042	5324	5418	5743	6005	6076	6256	6295	6681	7253	7520	7981	7986
+ / - Additional Sampled	0	0	0	282	94	325	262	71	180	39	386	572	267	461	5
Percent of Total GW Sources	0%	0%	46%	49%	49%	52%	55%	55%	57%	57%	61%	66%	68%	73%	73%
Total GW Sources	N/A	9800	10972	10972	10972	10972	10972	10972	10972	10972	<u>11000</u>	<u>11000</u>	<u>11000</u>	<u>11000</u>	<u>11000</u>
SW Sources Sampled	N/A	N/A	347	364	371	397	404	416	428	430	463	511	529	578	579
+ / - Additional Sampled	0	0	0	17	7	26	7	12	12	2	33	48	18	49	1
Percent of Total SW Sources	N/A	0%	45%	48%	48%	52%	53%	54%	56%	56%	58%	64%	66%	72%	72%
Total SW Sources	N/A	670	765	765	765	765	765	765	765	765	<u>800</u>	<u>800</u>	<u>800</u>	<u>800</u>	<u>800</u>
Sources with MTBE Detections	24	46	72	82	56	60	62	52	54	54	55	62	68	72	72
+ / - Additional Detections	0	22	26	10	-26	4	2	-10	2	0	1	7	6	4	0
Percent of Sampled Sources	N/A	1.45%	1.34%	1.44%	0.97%	0.98%	0.97%	0.80%	0.81%	0.80%	0.77%	0.80%	0.84%	0.84%	0.84%
GW Sources with MTBE Detections	13	26	43	52	33	35	37	31	33	33	34	40	43	46	46
+ / - Additional Detections	0	13	17	9	-19	2	2	-6	2	0	1	6	3	3	0
Percent of Sampled GW Sources	N/A	N/A	0.85%	0.98%	0.61%	0.61%	0.62%	0.51%	0.53%	0.52%	0.51%	0.55%	0.57%	0.58%	0.58%
SW Sources with MTBE Detections	11	20	29	30	23	25	25	21	21	21	21	24	25	26	26
+ / - Additional Detections	0	9	9	1	-7	2	0	-4	0	0	0	3	1	1	0
Percent of Sampled SW Sources	N/A	N/A	8.36%	8.24%	6.20%	6.30%	6.19%	5.05%	4.91%	4.88%	4.54%	4.70%	4.73%	4.50%	4.49%

Number of MTBE detections adjusted significantly downward without explanation between 07/99 and 08/99 and then again between 11/99 and 01/00.
 In the July 3, 2000 activity report the total number of systems and the GW & SW sources were reported in a footnote as rounded numbers (underlined).
 There is a significant change in the total system number, from 4681 to an estimated 4900, without explanation.
 On & after 07/03/00, the report uses rounded estimates for the total number of systems and sources (italicized).