

ANNUAL UPDATE FOR FISCAL YEAR 2006/2007

**COLORADO DEPARTMENT OF LABOR AND EMPLOYMENT
DIVISION OF OIL AND PUBLIC SAFETY**

SB 181

COMPLIANCE WITH WATER QUALITY STANDARDS AND CLASSIFICATION

SEPTEMBER 2007

This update is offered to the Water Quality Control Commission concerning the activities of the Division of Oil and Public Safety Storage Tank Program for the period ending June 30, 2007.

Technical Activities

Average number of active releases.....	1479
Number of confirmed releases.....	198
Number of sites issued No Further Action required letters.....	268
Number of Site Characterization Reports reviewed.....	184
Number of Corrective Action Plans reviewed and approved.....	331
Number of Monitoring Reports reviewed.....	2854
Number of Final Enforcement Letters sent.....	14

State Fund Information

Number of reimbursement applications approved by the PST Committee....	2314
Dollars reimbursed by the PST Committee.....	\$30,609,355

Listed below are improvements made by the Division to the program in order to more effectively investigate and remediate the contamination associated with petroleum storage tank system failures and protect the solvency of the Petroleum Storage Tank Fund.

Economic Feasibility Summary/Electronic Reimbursement Application (EFS/ERAP)

The OPS continued to implement the Economic Feasibility Summary (EFS) this year. The EFS allows for standardized submittals, accurate coding and streamlined reviews of all costs submitted for activities within a Corrective Action Plan (CAP). The costs to perform all tasks associated with pilot testing a

remediation system, report writing, purchasing equipment and materials, installing the equipment, etc., through site closure are required to be entered on the EFS. These costs are negotiated and approved by the Remediation Section technical reviewer. All current and future fund applications submitted at sites in the EFS process require an electronic reimbursement application (ERAP) summary of costs in the EFS format to be paid directly against the approved EFS.

A significant improvement to the EFS/ERAP process included the purchase and modification of a new software application, EFS+, that allows the user to prepare the EFS or ERAP via drop-down pick-lists for line item entries and view a budget summary. The resulting documents are accurately formatted for conversion into OPS' processing database, which will further streamline consultant preparation, OPS technical review, and OPS fund analyst processing of the document. EFS+ is available on OPS' website as a free download to users.

Methyl-Tert Butyl Ether (MTBE)

MTBE was adopted as a chemical of concern (COC) for the groundwater ingestion pathway through regulation in 2005. Additionally, an MTBE Guidance Document was developed and published to assist tank owners and operators and their consultants with completing MTBE assessments and cleanups. MTBE differs from other COCs in that the property boundary is not considered a POE, but rather water supplies used for human consumption within 2,500 feet of the source. From May 30, 2005 forward, responsible parties are required to analyze MTBE from groundwater samples collected at all site monitoring wells. During FY 2007, 36 Initial MTBE reports were reviewed, sites were classified according to risk, and pathway elimination was granted for 138 sites.

Remedial System Inspection Program (RSIP)

During FY 2007, OPS completed the fifth year of the Remedial System Inspection Program (RSIP). The purpose of RSIP is to conduct site inspections of facilities located throughout the state, which have been reimbursed in excess of \$100,000 dollars from the Petroleum Storage Tank Fund. The duplicate groundwater samples collected were laboratory analyzed using EPA Method 8260 for the volatile organic compounds BTEX, DCA, EDB, MTBE, ETBE, DIPE, TBA and TAME. Consistent with previous years, OPS continued to provide field support to the regulated community. During the RSIP site visits, OPS staff verified the installation of remediation systems; discussed with consultants (owner's representative) remedial system operational problems, system efficiency and the presence of subsurface formation heterogeneities that may influence the effectiveness of cleanup at the inspected sites.

The Remediation Section participated in an EPA initiative that is evaluating the presence of the fuel additive EDB at petroleum release sites. During FY 2007, groundwater was sampled at two sites with previous EDB detections. OPS also provided site-specific site data to the EPA to support the agency's efforts.

OPS Remediation Section provided regulatory oversight during the permanent closure of 318 petroleum storage tanks at 151 locations during FY 2007 and will continue this role in FY 2008. During these closure inspections, OPS staff ensures that proper tank closure methods are utilized and closure assessment sampling of soil and groundwater is conducted to measure for the presence of a release. During FY 2007, 93 site closures had confirmed petroleum releases. This program also focuses on the structural integrity of petroleum dispensing systems to determine the nature and cause of a detected release.

LUST Trust Fund

In FY 2007, the OPS continued to aggressively assess and remediate sites where tank owners were unknown, unwilling or unable to perform the work or in emergency situations. During FY2007, \$2,279,000 from the USEPA Leaking Underground Storage Tank (LUST) Trust Fund and cost recovery was spent at 46 LUST Trust sites. Thirty have active remediation systems operating, 10 are in monitoring, and four have corrective action plans tasked. Two investigations have been performed to identify the responsible party.

LUST Trust Fund Cost Recovery

In FY 2007, the OPS continued to implement a program to cost recover funds expended from the LUST Trust Fund. Costs were recovered at 48 sites where the RPs were eligible for reimbursement from the Colorado Petroleum Storage Tank Fund (PSTF). The eligible funds were transferred from the PSTF to the LUST Trust Fund. Approximately \$1,075,950 was recovered from the PSTF. The recovered money will enable the Section to continue to perform assessments and remediation activities at high priority sites. Total costs recovered to date are approximately \$7,361,370.

PST Fund State Lead Cleanups

In FY 2007, the OPS pursued assessment and corrective action activities at 51 active State Lead sites. Money from the PSTF was used to perform these activities at sites where persons who bear no responsibility for the releases received eligibility. Approximately \$1,950,000 was invoiced at these sites.

Brownfields Grant

The OPS received an EPA National Brownfields Assessment Grant in October, 2005. A brownfields site is real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. The award of the highly competitive \$200,000 grant will provide the OPS with funding to inventory, characterize, assess and conduct cleanup and redevelopment planning and community involvement related to brownfields sites. Thus far OPS has conducted Phase I and Phase II assessments at five Brownfields sites. Approximately \$100,000 has been expended on these assessments.

The OPS is partnering with Colorado Department of Public Health and Environment (CDPHE) and the Colorado Brownfields partnership on a Colorado Historic and Scenic Byways initiative to assess sites.

Risk Based Decision Making

In FY 2007, regulations that incorporate risk based decision making (RBDM) promulgated in February 1999, continued to be successfully implemented. The RBDM process consists of a tiered approach to site evaluation and cleanup. During the Tier 1 evaluation, the highest concentrations of chemicals of concern are compared to Tier 1 risk-based screening levels RBSLs for each complete exposure pathway. For sites with contamination above the RBSLs, owners/operators are given the option to cleanup to Tier 1 RBSLs or to collect additional site-specific data and proceed to a Tier 1A or Tier 2 evaluation. Six Tier 1A models, 125 fate and transport models (66 of which were for MTBE contamination) and three Tier 2 models were submitted in FY 2007.

Monitoring and Remediation Report (MRR)

During FY 2007, OPS developed a standardized reporting format to be used by consultants that provides OPS complete information necessary to make decisions on the direction of remediation or site closure. This document, the Monitoring and Remediation Report (MRR), contains the following:

- General site information
- Changes in site status since the previous monitoring event
- Cumulative data throughout the history of site monitoring
- Trends in groundwater contamination in relation to groundwater elevation
- Monitored remediation parameters for the most frequently used remediation technologies
- Calculations for contaminant mass removal
- Separate sheets for the insertion of site figures

The MRR is a Microsoft Excel based document that ensures consistent information and data reporting that will eventually be used to auto-populate OPS' publicly accessible database (COSTIS).

Vapor Intrusion Evaluation

Throughout 2005 and 2006, the OPS had completed an Access database that contains 40,000 vapor data points from 110 contaminated sites. During FY 2007, OPS shared the database with American Petroleum Institute (API) in an effort to evaluate attenuation of soil vapor. Study of this database is continuing and OPS anticipates that results will aid in the evaluation of risk based screening levels (RBSLs) implemented for both the soil vapor and groundwater to indoor air pathways developed in 1999.

During FY 2007, OPS also developed a draft Vapor Intrusion Guidance Document that presents current industry standards in the assessment and mitigation of the petroleum contaminant vapor intrusion pathway into structures.

Chemical Oxidation Study in Conjunction with the University of Colorado at Denver

During FY 2007, the OPS Remediation Section partnered with the Department of Civil Engineering at the University of Colorado, Denver (UCD) to evaluate the effectiveness of in-situ chemical oxidation (ISCO) in remediating contamination. A final guidance document was prepared that provides background information, a summary of factors influencing the effectiveness of ISCO, and tracks the site specific data and remedial progress of petroleum contaminated sites regulated by the OPS that have implemented an approved remedial approach using ISCO.

OPS staff presented findings and conclusions from the research, contained in the document, at the National Tanks Conference in San Antonio, Texas in March 2007. The research indicated that the overwhelming failure of ISCO at these sites was most likely due to lack of pilot testing and poor execution of the remedial plan. OPS anticipates that, as the technology evolves, additional oxidants and delivery methods will be proposed that will require consideration and careful evaluation.