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IT**

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Top 10 UST Compliance
Violations and their Potential
Risks and Costs for your
Convenience Store

2022

*An exclusive analysis conducted
by Clay Moore, Senior Director
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FOR CONVENIENCE STORE LEADERS

managing compliance, it can be tempting to focus primarily on underground storage tank (UST) leaks. A single significant UST release can result in multiple serious notices of violation (NOVs) from the U.S. Environmental Protection Agency (EPA), and ultimately generate hundreds of thousands of dollars in fines.

In some cases, resolving this kind of NOV can also involve substantial expense, bringing the total cost into the millions, including long-term investment in training and remediation efforts. In addition, site shutdowns to allow for mitigation can result in decreased business, and negative publicity may impact a company's brand and harm its reputation with the customers and communities it serves.

While all of this is true, the reality of that is such extreme scenarios are uncommon.

In fact, actual releases from USTs did not rank among the top 10 most common causes of open NOVs in October 2022, based on a detailed analysis of EPA data for five representative U.S. states. In addition, only two of the top 10 NOVs (water ingress and stormwater contamination) could suggest a current or potential release. The vast majority of NOVs actually stem from issues related to required equipment, practices, documentation, and preparations designed to prevent UST releases and ensure any future releases can be identified and resolved in a timely manner.

Simply stated, the absence of a UST release does not necessarily indicate compliance, and it is critical to take a more holistic view of compliance at a site level.

This includes a coordinated, consistent approach to several key areas governed by EPA requirements:

- Installation
- Release Detection
- Compatibility
- Spill and Overfill Prevention
- Corrosion Protection
- Walkthrough Inspections
- Operator Training
- Repairs
- Financial Responsibility & Insurance
- Release Response
- Closure
- Documentation & Reporting

Failure to manage all of these areas effectively creates the potential for compliance violations, including the top 10 NOVs documented in this analysis. While not all compliance issues result in an NOV, and not all NOVs lead to fines or other penalties, understanding the most common reasons for NOVs can provide valuable insights into key risks or challenges facing C-store compliance leaders today.

STAGES OF NON-COMPLIANCE

When the U.S. EPA discovers a potential compliance violation, the process to inform the C-store involved and resolve the issue can vary, depending on the nature and severity of the issue.

In all cases, the goal is to create awareness of the issue, achieve a timely and complete resolution, and prevent future occurrences.

- 1. Warning:** In some cases, the EPA may send a warning letter before issuing a formal NOV.
- 2. Notice:** Formal communication that the EPA believes a violation has occurred. Will include details on what must be done and the deadline(s) to do so.
- 3. Reminder:** Communication of an imminent deadline for an NOV yet to be resolved.
- 4. Enforcement:** Letter informing of failure to meet NOV requirements, officially establishing non-compliance.
- 5. Action:** Penalties resulting from non-compliance. Can include fines, administrative orders, judicial injunctions, site shutdowns, and other punitive measures.



METHODOLOGY

This analysis is based on a statistical review of nearly 125,000 unresolved (open) NOVs in October 2022, regardless of age (issue date) across five U.S. states with the largest C-store presence (by number of locations), strictest regulations, and/or most available data.

Data was compiled from both the U.S. EPA and state regulatory bodies. Conversations with state officials and major fuel retailers provided additional context.

States included:¹

- Texas (15,742 C-Stores)
- California (12,053 C-Stores)
- New York (7,848 C-Stores)
- Illinois (4,623 C-Stores)
- Arizona (2,094 C-Stores)



#1

MISSING DOCUMENTATION

Violations: 43,685
Cost to Resolve: Up to \$2,000
Risk: Undiscovered Leak

Severity:

1 2 **3** 4 5



The single most common violation uncovered by this analysis is related to missing documents. This may not be surprising, given the number of assets that need to be monitored at each facility and the volume of documentation they generate.

For example, a given site might have two USTs and manifold piping to connect them to pumps, for a total of three critical assets subject to regulatory compliance.

For each asset, the site operator is responsible for monthly release detection and visual inspections, as well as annual tests and a Stage 1 vapor recovery or containment sump test every three years. Documentation is required for each test on every asset, and operators need to maintain these records for at least three years (or possibly decades if there is a historical petroleum release).

This means that this one site would need to manage upwards of 225 documents in order to pass a regulatory inspection and comply with record-keeping requirements.



For companies with larger footprints encompassing dozens or even hundreds of sites and assets, the scale of complexity and volume of documentation increases dramatically.

Common causes for this violation include missing automatic tank gauge (ATG) results, tank test results, and permits or licenses. In all cases, the site operator is responsible for providing the documentation and can incur penalties for not doing so. This is true even if the site uses a vendor for testing, or if permits are up-to-date but can't be located. A missing or outdated permit or license is an especially concerning violation because there is no way to resolve it—one can't travel back in time to meet a past deadline—so it inevitably leads to a penalty.

#2

MISSING INVENTORY CONTROL REPORTING

Violations: 23,486
Potential Penalty: Up to \$15,000
Risk: Costly Penalty

Severity:

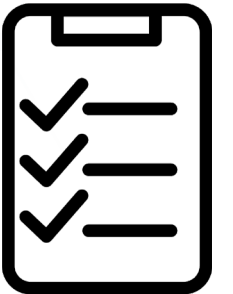
1 2 3 4 **5**



Inventory control provides a critical line of defense against UST releases based on a simple principle: precise mathematic calculations. By carefully measuring tank contents and tracking both amounts pumped and fuel deliveries, one can compare actual to expected volumes and readily identify any discrepancy.

Requirements for inventory control vary by state and may or may not be a primary source of release detection. In many cases inventory control reporting is required every 10, 20, or 30 days.

Maintaining full compliance can be challenging due to the volume of data required on an ongoing basis, as well as the potential for technical issues and human error.



For example, monitoring tank contents with ATGs can be more accurate and consistent than doing so manually, but individual data points (for a given tank or day) can still be lost, impacting the totals. Especially for C-stores with smaller footprints or older systems, much of the required data is still captured and entered manually, creating great potential for delayed, missing, or inaccurate information.

While inventory control can be a complex, ongoing challenge, managing it well can yield benefits beyond avoiding violations and potential fines. Accurate inventory management can also enable better understanding of the sources of variance at the site.

#3

WATER INGRESS

Violations: 22,624

Cost to Resolve: \$400 to \$600 for water pump-out

Risk: Contamination, Undiscovered Corrosion, Product Release

Severity:



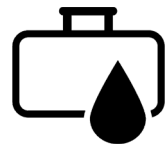
Keeping water out of USTs is an ongoing battle that requires constant vigilance and variety of strategies. Especially in wetter climates with a substantial amount of precipitation, abundant subsurface moisture, a high water table, or damp conditions, water ingress violations can be commonplace. Water ingress issues can result in not only costly compliance fines, but also difficult and expensive water removal efforts.

The EPA and state regulators consider this issue important for two reasons.



First, the presence of water in a fuel tank suggests a potential compromise or integrity issue in the equipment or its use. Examples can include cracks in tanks, pipes, or hoses; loose seals or missing or worn-out gaskets, caps; or gaps or flaws in operational processes.

In the event of floods, UST systems can become submerged or displaced by flood waters or extended periods of heavy rain, leading to damaged fuel systems or even a product release into surrounding groundwater.



Secondly, any significant amount of water in a UST can cause phase separation and fuel contamination, which can affect vehicle performance and public safety. In addition, microbial contamination from water ingress can result in the corrosion of the metal parts of tanks and/or dispensing equipment and often leads to sludge in the tank in as little as 12-18 months.

Recent regulations require specific safeguards for newly installed or upgraded USTs and pipes, including double-wall construction and installation of sump systems. Containment sumps must be tested every three years. In addition, some states require operators to monitor tanks for water ingress and to report water alarms in a timely manner.

#4

PERMITS NOT UP TO DATE

Violations: 16,984

Cost to Resolve: \$800 to \$1,500

Risk: Shutdown

Severity:



Managing permits is a seemingly straightforward exercise in theory, but it can be quite complicated in practice. Anyone who owns, acquires, installs, or upgrades a UST is required to have valid, current permits in place demonstrating that they have logistical and financial resources in place to operate the tank successfully.



Specific timeframes and details can vary by state, but in all cases permits are required for each site, they must be displayed publicly, and expired permits can result in "red tag" violations, forcing a site to cease operations until the violation is resolved.

In addition to keeping permits current for any UST in active use, operators must notify their state regulatory agency within 30 days anytime a key change takes place related to a UST.

These changes include the sale or purchase of a UST, bringing a new UST online, or upgrading a UST (adding or improving equipment or technology).³

Due to the number of permits required, as well as the variety of scenarios that can create a need for new or updated permits, ensuring that all permits are valid and current can be challenging. Doing so is vitally important, however, as missing or invalid permits can result in substantial fines and significant business impact due to potentially prolonged site shutdowns.



#5

30-DAY INSPECTION DELAYS

Violations: 16,960

Cost to Resolve: \$350 for inspection

Risk: Undiscovered Issue

Severity:

1 2 **3** 4 5



A relatively new regulation⁴, as of October 2018, visual inspection of facilities and components is required on a 30-day or monthly basis. These inspections are intended to ensure proper operation and maintenance of UST systems and detect any potential defects or failures before an actual release.

As part of these inspections, operators need to evaluate release detection equipment and spill prevention systems, noting any damage, obstructions, or other issues that could compromise performance. In addition, release detection equipment must be tested for proper operation annually, and spill prevention equipment tests are required every three years.



Specific inspection requirements vary by state, but in all cases, assessments must be conducted by a designated inspector.

This creates a potential challenge in finding and engaging inspectors with the appropriate expertise and qualifications. In some states, a C-store's employees may be permitted to serve as inspectors, but even when this is possible and personnel have the proper certifications, inspections can be lengthy and complex, requiring significant time away from their other job duties. In all cases, inspection details and results need to be documented and maintained for several years.



#6

SPCC PLANS NOT MAINTAINED

Violations: 416

Potential Penalty: Up to \$5,000

Risk: Poor Response to a Release

Severity:

1 2 3 **4** 5



The EPA requires many operators to develop and maintain a Spill Prevention, Control, and Countermeasure (SPCC) plan to help prevent the discharge of oil or oil-based products into the environment—and to implement this plan in the event of an incident to help control the spill.⁵

The SPCC requirement applies to any facility with a storage capacity of more than 1,320 gallons aboveground or 42,000 gallons underground.

Spills can occur for a variety of reasons including overfilling USTs, leaking pumps, line fitting/seal issues, delivery spills, customers overfilling vehicle tanks, or a non-functioning shutoff valve.

To help prevent spills and mitigate the impact if one occurs, the EPA requires SPCC plans to describe oil handling operations, spill prevention practices, discharge or drainage controls, and the personnel, equipment, and resources used to prevent oil spills from spreading. An SPCC plan needs to be both broad in scope and quite detailed, encompassing facility diagrams and drainage maps, site security and inspection procedures, personnel training and recordkeeping policies, and plan approval and certification details.

In addition, plans must be kept current, so any relevant change to sites, equipment, processes, or personnel may require an update to ensure compliance.



Vehicle overfilling can cause aboveground spills, but underground spills are more common and involve specific requirements related to soil testing and reporting.



#7

VAPOR RECOVERY TEST NOT CONDUCTED

Violations: 320

Cost to Resolve: \$36,000

Risk: Shutdown

Severity:

1 2 3 **4** 5



Vapor recovery is regulated nationwide to help reduce the release of potentially harmful gasoline vapors into the atmosphere when using a commercial fuel pump to refill a fuel tank.

In most states, regulations only govern stage 1 vapor recovery efforts, which involve the use of specific equipment to help reduce vapor release during fueling. In addition, California currently requires stage 2 vapor recovery, which actually captures vapors as fuel is dispensed and then returns them to the UST.⁶



To ensure compliance, fuel retailers in California use In-Station Diagnostics (ISD) systems to monitor systems dedicated to stage 2 vapor recovery. Regulations require daily testing of ISD alarm systems to confirm proper functioning.

In addition, a more extensive test of the full vapor recovery system is required twice per year. This is a specialized process that is often managed and performed by a vendor, but the site operator is still responsible for its timely completion.

Failure to conduct this test on schedule, or doing so improperly, can result in an NOV and potentially lead to costly penalties if the test is not conducted by the specified deadline.

#8

STORMWATER POLLUTION VIOLATIONS

Violations: 240

Cost to Resolve: \$400

Potential Penalty: Up to \$1,000/day

Risk: Contaminated Water Supply

Severity:

1 2 3 4 **5**



Operators of fuel stations (and many other businesses with sizable physical locations) are required to actively manage and regularly monitor stormwater runoff. The presence of fuel or other contaminants in stormwater can indicate a potential UST release, or it may be a sign of aboveground spill or improper safety and cleanup processes.

Stormwater violations can be especially common in climates that receive significant precipitation or locations that experience a sudden downpour or flooding, but they can occur anywhere wet conditions can arise, leading to waterflow over impervious surfaces like concrete and pavement.

When this happens, the liquid can absorb and carry harmful substances (such as gasoline, oil, and chemicals) that can pollute the surrounding land and downstream bodies of water.

Stormwater management and testing regulations are established by the Federal Clean Water Act, which may require a National Pollutant Discharge Elimination System (NPDES) permit in some cases.⁷ In addition, state regulations may apply and can vary by location.

As a general rule, stormwater controls that adhere to well-documented best management practices (BMP) are likely to maintain compliance. Examples of applicable BMPs include using dry cleanup methods for fuel dispensing areas, regular stormwater inspections, and installing spill containment and overflow prevention systems.

#9

RED TAG REMOVAL

Violations: 91
Potential Penalty: \$10,000 or more
Risk: Shutdown

Severity:

1 2 3 4 **5**



Inspectors can issue a red tag for a number of reasons ranging in severity, including expired permits, maintenance issues, meter calibration errors, faulty dispensers, and other compliance violations. In all cases, the immediate impact of a red tag is the same:

the impacted UST or dispenser cannot be used until the issue is resolved, and only the inspector who issued the red tag can remove it.

The requirements to accomplish this depend on the circumstances, but only the inspector who issued the red tag has the authority to declare the issue resolved and remove it.



Red tag removal violations occur when an operator resumes using red-tagged equipment before the issue is officially resolved, or when someone other than the designated inspector removed the red tag. This can occur for fairly benign reasons, such as when operators mistakenly believe an issue is resolved, or when a vendor hired to address the issue removes the tag prematurely upon completing service.



Violations can also occur for more self-serving but understandable reasons. Red tags typically result in suspended operations and lost sales, and it can take time both to address the root cause of the issue and arrange a return visit by the inspector authorized to clear the red tag.

Operators may feel justified in resuming use of red-tagged equipment they consider safe and compliant, but doing so is unwise, as it can result in additional penalties at best, and an avoidable release, destructive accident, and long-term reputational damage at worst.

#10

USE OF OUT-OF-SERVICE TANK

Violations: 80
Cost to Resolve: \$1,000 to \$2,000
Potential Penalty: \$5,000 to \$10,000
Risk: Release and Remediation

Severity:

1 2 3 **4** 5



This violation occurs when a UST is in use (contains fuel) despite being officially registered as out of service. In some cases, this situation can arise in relation to permit or red tag issues (see #4 and #9), as when an active tank does not have current permits or a red tag is removed prematurely.

In other cases, the issue can stem from common mistakes, such as a carrier delivering fuel into the wrong tank, or a new owner or personnel placing an inactive tank into service.

State based delivery prohibition programs⁸ are intended to prevent use of USTs that are designated out-of-service.

These programs generally follow one of two approaches: red tag or green tag.



Red tag programs identify tanks that are ineligible for delivery by physically placing a mechanism (typically a red tag, but specifications can vary) on the fill pipe. If no mechanism is present, carriers can assume delivery is permitted.



In contrast, green tag programs place a mechanism (again, often a green tag, with some variation by state) on tanks that are eligible for delivery. If a mechanism is not present, the tank is not eligible for delivery.

While states with a green tag program require positive validation that a tank is registered as active before making a delivery, in red tag states the default assumption is that an untagged tank is eligible for delivery. This creates the potential for error if a red tag has been removed without authorization, for instance, or if a tank is ineligible for another reason but assumed to be in service. Neither type of program can prevent 100% of violations, however, and the burden of ensuring compliance and responsibility to address any infractions and pay related fines rests solely on the operator.

NON-COMPLIANCE

COUNTING THE COSTS

Given the complexity of federal and state regulations governing UST operation, ensuring compliance can be a complex and challenging endeavor that requires a dedicated focus and diligent effort.

However, the investment needed to manage compliance effectively is far less than the potential cost and difficulty involved in receiving and resolving compliance violations.

In fact, many violations can result in specific costs in up to seven different areas, which can easily add up to a substantial financial impact.

FINES: The best known and most direct costs of non-compliance, civil penalties for UST violations can be as high as \$10,000 per tank, per day. For every 24 hours without verified resolution of the issue, the total cost continues to increase.

REMEDIATION: The operator is responsible for any cost incurred in restoring a site to compliance. Depending on the nature of the violation, this can involve relatively inexpensive process or permit updates, or result in more significant consequences that require a large investment in cleanup costs, new equipment, infrastructure, and programs, which could potentially last for decades.

TIME/RESOURCES: Notices of violation deadlines are often aggressive, so operators will likely need to shift personnel and budget from other priorities to ensure timely and effective action. In some cases, failure to meet the deadline can also result in additional fines.

CLEANUP: In the event of a fuel release, operators are responsible for cleanup efforts, which can be extensive and costly. This is on top of possible direct fines for failure to start or complete cleanup appropriately, which can be up to \$37,500 per day. In addition, the EPA may require remediation in the form of increased investment in monitoring and prevention efforts for up to 20 years.



TRAINING/CERTIFICATION: Some violations can result in a requirement for key site personnel to complete additional training in order to regain certification (Class A-B or C). This can involve both direct costs and significant time diverted from other job duties.

LOST REVENUE: In some cases, such as red tag violations, a site may be required to shut down for 10 days or more, resulting in significant lost business. The negative impact on an operator's brand can also be significant, as inconvenienced customers may choose to give their business to other fuel retailers, even once a site is back in operation.

STATE FUNDING: In 36 states, financial trust funds are in place to help UST owners comply with federal regulations related to financial responsibility. In the event of a fuel release, compliant operators can depend on these funds to offset a significant portion of cleanup costs. Non-compliant operators do not qualify for this support and must cover the full costs directly.

With thousands of aging USTs in active use, many site operators must decide between incurring the costs of installing new equipment and managing the risks of continuing to use existing equipment. This can be a difficult decision to navigate, and it often depends on the specific details of each site or scenario. In all cases, the most important consideration should be what will enable an operator to confidently ensure compliance, avoid NOVs, and prevent a fuel release.

WITH CONFIDENCE

Ensuring compliance can be a constantly changing, deeply complicated challenge, but it is both essential for C-store success and realistic to achieve.

In addition to continual vigilance and careful attention to detail, a few proven success strategies can help you stay compliant with federal and state regulations and reduce your risk of NOVs, penalties, releases, and other negative impacts.

APPROACH

A fundamental key to long-term success is ceasing to see compliance as an endless series of individual requirements and one-time interventions. Instead, it pays to take a more holistic view and proactive approach, embracing compliance as an essential, ongoing business activity that can and should be a core priority—and an integral part of operations—companywide. Adopting this mindset is a crucial first step, but putting it into practice can be a more daunting goal.

A good place to start is by breaking down barriers and implementing best practices in three key areas: people, processes, and tools.

PEOPLE

While advanced technology can play a vital role in C-store compliance, your most valuable resource will always be people. That's why it's important to strive to break down silos among various sites, departments, and roles and create a company culture where compliance is prioritized across the board.

Doing this depends on equipping people with knowledge, encouraging them to play an active role in supporting compliance, and empowering them to share information and report issues as needed. In addition to internal stakeholders, regulators and vendors can be a valuable source of insights and advice based on their unique expertise and experience. After all, regardless of individual roles, everyone shares the same ultimate goal: safe operations with zero violations.

PROCESSES

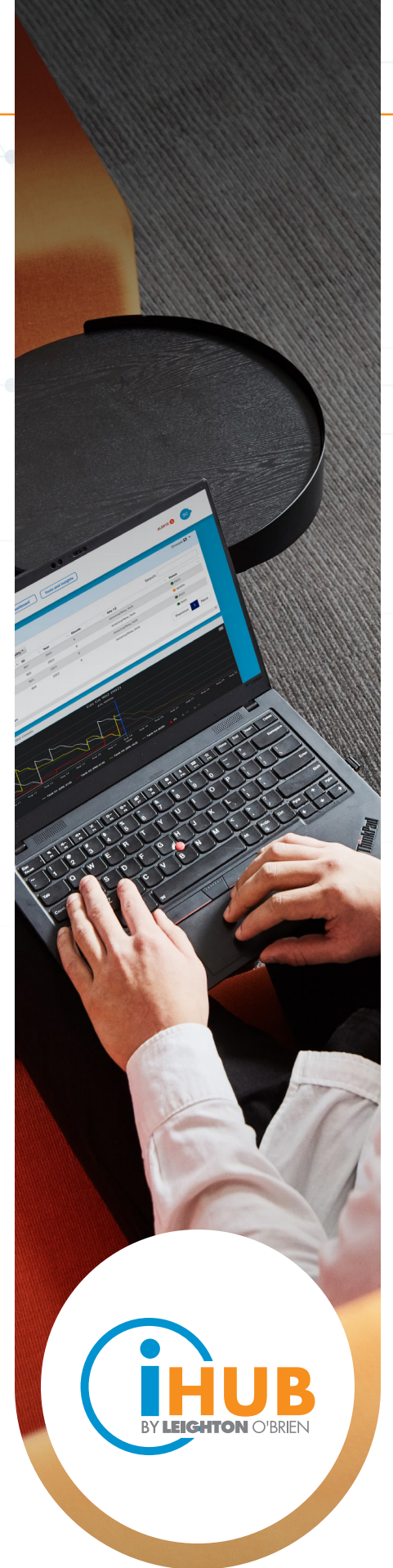
In addition to updating processes to reflect a compliance-focused, silo-free culture and the integrated use of appropriate technology, new processes may be helpful to reinforce best practices at all levels.

- For instance, maintenance, testing, and operational schedules can be better coordinated as more data is available with greater detail.
- New and improved processes for investigating variance, addressing alarms, and managing replenishment may also yield benefits.
- Finally, making periodic training and ongoing knowledge-sharing standard operating procedure can help set expectations and keep everyone working together toward the same objectives.

TOOLS

While technology is no silver bullet for all compliance challenges, it can be extremely helpful in reducing complexity and increasing efficiency and transparency. In particular, having a centralized repository for digital documents can be extremely helpful in managing large volumes of detailed records, as well as enabling accurate, comprehensive reporting.

In some cases, modern solutions can also integrate detailed data from ATGs, pumps, vendors, service providers, and other sources, making it possible to monitor compliance in real time, view key metrics at a glance, automate labor-intensive processes, and distinguish legitimate issues from routine false alarms.





ABOUT LEIGHTON O'BRIEN

Leighton O'Brien is a leading global provider of fuel management software analytics and field technologies for downstream fuel retail and commercial fueling operations. We help customers maximize site compliance, equipment uptime and profitability.

For more than 27 years, Leighton O'Brien has delivered software and technology platforms that help reduce risk and cost while optimizing forecourt operations with centralized data intelligence.

Our certified solutions provide the industry's most accurate leak detection, minimize fuel losses, lower maintenance costs, improve inventory management and product quality, and prolong asset lifespan.

With staff in North America, Europe, Africa, Asia Pacific, and the Middle East and 81 partners in 34 countries, we are well-positioned to serve innovative, growth-focused clients worldwide.

For more information visit leightonobrien.com.

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¹<https://www.convenience.org/Research/FactSheets/IndustryStoreCount>

²<https://www.epa.gov/ust/musts-usts>

³<https://www.epa.gov/ust/notification-forms-underground-storage-tanks>

⁴<https://www.epa.gov/ust/operating-and-maintaining-ust-systems-2015-requirements>

⁵<https://www.epa.gov/oil-spills-prevention-and-preparedness-regulations/spill-prevention-control-and-countermeasure-19>

⁶<https://ww2.arb.ca.gov/our-work/programs/vapor-recovery>

⁷<https://www.epa.gov/npdes/npdes-stormwater-program>

⁸<https://www.epa.gov/ust/state-delivery-prohibition-programs>