

BUSTR's Leak Autopsy Study

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BUSTR implemented a leak autopsy program during 2003 with the intent of determining the origin, cause, and extent of reportable releases of petroleum to the environment. The information gathered during this project will be used to answer the following questions:

Are there UST regulations in addition to the 98 Compliance standards that Ohio can promulgate to reduce the probability of releases in a cost-effective manner?

Where should BUSTR field inspectors focus their attention when inspecting UST systems to best prevent leaks?

If Ohio is required to devise a UST Operator training program, what do UST Operators need to know to significantly reduce the probability or extent of a release?

During 2003, BUSTR received reports of 147 confirmed releases of petroleum to the environment. As part of the leak autopsy program, BUSTR made it a goal to visually inspect every confirmed release reported from an **in-service UST system** to determine the release cause, location, method of detection, and the compliance status of the facility. In 2003, thirty-nine (39) releases were reported from in-service UST systems. The release sources are identified below:

Table 1: UST System Release Location and Cause

Release Location	Number of Releases	Cause
Piping/flex connectors in sump areas	12	6 failed flex connectors 5 leaks at connector/line union 1 leak at connector/pump union
Piping runs	9	4 due to piping failure 4 due to physical damage 1 due to corrosion of metal piping
Other ancillary equipment	7	5 failures of dispenser equipment such as shear/blending valves 2 leaks in the line ELD
Spill/Overfill	6	2 broken spill bucket plungers 2 cracked/broken spill buckets 1 malfunctioning flapper valve 1 due to operator error/inattention
UST	5	4 due to corrosion 1 due to physical damage

While there are many different causes for the releases, some observations can be made:

- A majority of these releases occurred at the dispenser or submersible pump area. The installation of sumps in these areas may be effective in containing releases.
- All 5 releases due to tank or piping corrosion protection failures occurred on tanks installed prior to December 22, 1988. Releases related to corrosion do not show up in large numbers. However, when the relatively small number of bare steel tanks in Ohio (installed prior to December 22, 1988) are scrutinized, corrosion is a significant risk factor. Examination of recorded violations from compliance inspections also shows significant compliance problems related to long-term maintenance of corrosion protection systems.
- Other states have reported problems with flex lines leading to a large number of releases. BUSTR has not seen a large number of such failures in Ohio, but they are present. Inspectors did observe flex line failures including pinhole leaks contained by secondary containment, corrosion at the sump unions due to dissimilar metals, and swelling of the flex line.
- Visual inspections of fill and overfill systems and sump areas on a periodic basis may stop releases before they become extensive. Broken spill bucket plungers or other mechanical problems with overfill protection equipment can lead to significant and expensive cleanups over time.

Also as a result of the autopsy program, BUSTR found that proper operation of leak detection systems can significantly increase the chance a release will be detected early, before it becomes extensive and costly to clean up. But such systems are not fail safe. BUSTR observed two instances where the installed line leak detection system did not detect a system release. In both of these instances, the leak occurred in the line leak detector device itself. This demonstrates the importance of maintaining accurate inventory records and periodically inspecting sump areas. It also illustrates the need to periodically test piping leak detection devices, the most common compliance violation found by BUSTR field inspectors during 2003.

BUSTR is looking at the results of this study to help determine cost/benefit for any potential new rule requirements and to identify training or outreach programs that will be effective in preventing releases while minimizing costs to tank owners. Until then, note that a drop of prevention can be worth a gallon of cure. A UST owner or operator that pays attention to his leak detection system, performs long term scheduled maintenance, keeps inventory records, and investigates unusual operating conditions has an excellent chance of avoiding an extensive and potentially costly release.

As always, the Board wishes to remind owners and operators that compliance with release detection and release prevention are a prerequisite for the issuance of a Certificate of Coverage and for Fund eligibility.

