STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION

DIVISION OF UNDERGROUND STORAGE TANKS

COMPLIANCE GUIDANCE DOCUMENT - 111

EFFECTIVE DATE - July 29, 1996
(REVISION DATE - July 19, 1999)

RE: REQUIREMENTS FOR LEAK DETECTION ON UNDERGROUND SUCTION PIPING

The purpose of this guidance document is to assist the regulated community in understanding the regulatory requirements for *Rule 1200-1-15 .04(2)(b) 2*. Suction piping. This rule states the following:

Suction piping. Underground piping that conveys petroleum under suction must either have a line tightness test conducted at least every 3 years and in accordance with Rule 1200-1-15-.04(4)(b), or use a monthly monitoring method conducted in accordance with Rule 1200-1-15-.04(4)(c). No release detection is required for suction piping that is designed and constructed to meet the following standards:

(I) The below-grade piping operates at less than atmospheric pressure;

(ii) The below-grade piping is sloped so that the contents of the pipe will drain back into the storage tank if the suction is released;

(iii) Only one check valve is included in each suction line;

(iv) The check valve is located directly below and as close as practical to the suction pump; and

(v) A method is provided that allows compliance with subparts (b) 2(ii)-(iv) of Rule 1200-1-15-.04(2) to be readily determined.

INTRODUCTION

Most suction systems use a positive displacement pump at or near the point of end use to draw the product from the tank to the pump (dispenser). The pump creates a lower pressure at the pump end of the pipe, thereby allowing atmospheric pressure to push the product along the pipe to the delivery point. Typical suction lines operate at a vacuum of 3 to 5 psi. When the pump is shut off or a hole or break develops, suction is interrupted and the product flows from the dispenser (pump)

to the tank. Check valves close when product begins to flow backwards through the pipe. Product in the pipe between the tank and a check valve drains back into the tank, unless there is more than one check valve in the line.

Suction systems are characterized as "European" or "American" systems. In the European system, the check valve is located immediately below the pump. When the pump is turned off or there is a line failure, suction is broken and most of the product drains back into the tank. In the American system, the check valve is located near the top of the tank, where it is often called an angle check, or at the bottom of the suction line within the tank, where it is called a foot valve. When there is a line failure, product cannot drain into the tank and is released to the environment. Although the total release is relatively small, it can occur each time product is dispensed. Over a long period, this results in a significant cumulative effect.

REQUIREMENTS FOR SUCTION PIPING

No release detection methods are required if the suction piping operates at less than atmospheric pressure and has the following characteristics: (1) enough slope so that the product in the pipe can drain back into the tank when suction is released, and (2) has only one check valve, which is as close as possible beneath the pump in the dispensing unit. If a suction piping system is to be considered exempt from leak detection requirements, there must be some way to verify that the line was actually installed to these specifications. The Division may consider as-built installation drawings with installation checklists and photographs as verification.

If suction piping systems do not meet all of these design parameters, <u>one</u> of the following release detection methods must be used:

- Line tightness testing must be conducted at least every three (3) years. The line tightness test must be able to detect a leak at least as small as 0.1 gallon per hour when the line pressure is one and one-half times its normal operating pressure. For more information concerning line tightness testing see Compliance Guidance Document (CGD)- 113.

- Monthly groundwater monitoring

- Monthly vapor monitoring

- Monthly Statistical Inventory Reconciliation (SIR)

- Monthly interstitial monitoring

Groundwater monitoring, vapor monitoring, SIR, and interstitial monitoring all have the same regulatory requirements for piping as they do for tanks. For more information concerning these types of monthly monitoring see Compliance Guidance Documents (CGDs)- 105, 106, 107, and 108 respectively.

REPORTING AND RECORDKEEPING

If the results from any tightness testing indicate the tank and/or lines may have had a release of petroleum, then the Division must be notified within 72 hours of a confirmed release. Owners and/or operators must take immediate action to prevent any further release of the petroleum into the environment, and take immediate action to identify and mitigate fire, explosion, and vapor hazards. Owners and/or operators must repair, replace, or upgrade the UST and/or piping, and begin corrective action in accordance with *Rule 1200-1-15-.06* if the test results for the system, tank, or delivery piping indicate that a leak exists.

If monitoring results from groundwater monitoring, vapor monitoring, interstitial monitoring or SIR indicate the UST system may have had a release, then the owner and/or operator shall notify the Division within 72 hours and begin release investigation and confirmation steps in accordance with *Rule 1200-1-15-.05(3)*. This applies unless: the monitoring device is found to be defective, and is immediately repaired, recalibrated, or replaced, and additional monitoring does not confirm the initial result. If the monitoring device is determined to be defective and a suspected release was not reported to the Division, the owner/operator shall document that the device was defective and the actions taken for correction. This documentation shall also include additional monitoring results.

The results of the most recent tightness testing must be maintained.

The results of testing from the monthly monitoring (groundwater, vapor, interstitial, SIR) must be maintained for at least one year.

Records of all calibration, maintenance, and repair of release detection equipment permanently located on-site must be maintained for at least one year after the servicing work is completed. Any schedules of required calibration and maintenance provided by the release detection equipment manufacturer must be retained for five (5) years from the date of installation. Note: Records of UST system repairs must be maintained for the life of the UST system.

Records must be kept at the UST site and be immediately available for inspection by the Division, or at a readily available alternative site and be provided for inspection to the Division upon request.