

INVENTORY CONTROL IN STORAGE TANKS

Why inventory control? Detailed inventory control is required for operators of underground storage tanks as a leak detection method which can be used in conjunction with tank tightness testing for the first ten (10) years after a tank meets the corrosion control requirements, and it is required for operators who use automatic tank gauging. The Uniform Fire Code requires that operators of above ground tanks perform inventory control. But why? Aren't there better methods of leak detection?

The answer is somewhat complex. For tanks which were upgraded with corrosion protection within the last ten years, or installed new with corrosion protection, inventory control and tank tightness testing is allowable as the only methods of leak detection. Properly done, inventory control can be quite effective as a leak detection method. **To be effective, inventory control must be done daily.** If done on a daily basis and set up correctly, inventory control does not take very much time. The entire procedure takes about five minutes per tank, and that counts the time to stick the tank. The mathematics is not complicated, and should not take a lot of time. The striking advantage of inventory control is that leaks can be spotted within a few days of their first occurrence, sometimes on the very first day. In writing regulations, EPA apparently wanted to allow companies to use a method which would cost little, in fact, requiring something that the companies were probably doing anyway.

Proper inventory control, after all, is a part of daily business life in every business. Whether you sell shirts, candy bars, plumbing supplies, or gasoline you need to keep track of your inventory. Most retailers now keep track of inventory as it is sold as a way of controlling costs by preventing over stocking, to keep track of theft losses, and to insure that stocks are not allowed to run out. After all, if you haven't got an item you miss an opportunity to profit by selling that item. Retail gasoline and diesel sales are no different. Properly done, inventory control will not only detect leakage, it can also be used to project accurately when and how much product to order several days in advance. Retailers with enough storage capacity can sometimes use this information to purchase inventory prior to expected price run increases and thus profit from those increases. You can't do this if you don't know how much storage capacity you have now, and also how much you will have in a few days.

But why are you required to do inventory control if you have an automatic tank gauge? After all, the ATG is considered a monthly monitoring technique and should be a stand alone method. The fact is that ATG's require the tank to be completely down during a test or they are using some form of statistical method to allow a test to be conducted during routine dispensing. In either case, ATG's may not be able to provide a passing result if other factors interfere with the test. These interrupted tests show as test failures on most ATG's even though they actually represent only a test which was started and could not be completed. In writing rules, EPA was aware of this problem, so you are not required to consider every ATG 'failure' as a suspected release. In fact, if you can get at least one passing test per month with an ATG you are in compliance with that method. So you could have a leak that goes on for more than a month before the ATG method alone will detect the leak. That is why you are required to do inventory control even when you have an ATG.

Some tank operators believe that they have to stick the tank to do inventory control even when they have an ATG. This department does not require that you do that, but we do recommend that you stick the tank once in a while just to determine if the inventory produced by the ATG accurately reflects the facts. After all, ATG's are instruments which must be properly calibrated for your tank and for the particular sensor in that tank, and for the product being stored in the tank. These calibrations can become corrupted and you should check once in a while to be sure that the tank gauge actually shows what is in the tank.

With an ATG, the operator can do inventory control by getting an inventory report from the ATG and using those volume numbers in place of the stick readings. The rest of the procedure is just like doing inventory control using stick readings. If you are not doing the math, you are not doing inventory control. Some operators seem to think that getting an inventory printout once a day is enough. That is only the start of the procedure, you must add up the inventory daily and reconcile the report monthly. By doing this procedure properly, every day, you will see losses quickly if they occur. If you have un-explained inventory increases or decreases it is relatively easy to investigate those happenings if you see them quickly. After several weeks it gets a lot harder to find errors.

What about other methods? Should you be doing inventory control with them too? Other leak detection methods use entirely different means to detect a leak and inventory control is not required except in one case. That method is Statistical Inventory Reconciliation. SIR is a form of inventory control. Doing a proper job of inventory control before the results are even submitted to the SIR company will help insure that you will get a passing result and not an inconclusive. Incidentally, most SIR methods require that you investigate the cause of every inconclusive result. Since most inconclusive results are caused by forgetting to report a delivery or a typographical error on a meter reading, inventory control can eliminate most of them before they occur.

This department *highly recommends* that every operator do inventory control for every tank, regardless of whether your leak detection method requires it or not. This is because inventory control can detect some leaks quickly that no other method can detect.

Recently we had a leak at a station when the gasket below an automatic line leak detector failed. The line leak detector could not detect that leak because it is outside of the portion of the pipe that is protected by the line leak detector. The automatic tank gauge could not detect that leak because it was not a leak within the tank. But inventory control, had the operator been doing it, could have detected the leak within a day, rather than finding the leak when the gasoline got to the river. That particular leak could have resulted in a catastrophic explosion since gasoline found its way into an eight foot diameter storm sewer. The amount of explosive vapors in that sewer could have destroyed the street and possibly even an interstate highway overpass. That right there is an excellent reason to do inventory control. *The one million dollars in off site liability coverage would not have even begun to pay the claims that could have resulted against that operator if there had been an ignition source to set off that sewer.*

To assist you in doing proper inventory control, this department offers forms in both hard copy and also in word perfect and excel format. There are two forms which you need to do for inventory control. The first is a form used to reconcile fuel deliveries and the second is the actual daily inventory control form. Both of these forms are set up to do the math for you and all of these forms should be fairly self explanatory. If you need help contact the department and we will be happy to walk you through the process. Those of you with computer skills can probably very easily adapt the excel form with a lookup table for your tank chart. That would make it even easier.

One last thought. Sometimes inventory control records will indicate a passing result every month, but every month that result is negative. The fact that every month is negative *may* indicate that a leak exists. You need to investigate that even if you pass every month. There is *one other possibility* when every month is negative, and that is your meters are out of calibration. Standards require that a meter be calibrated to within 5 cubic inches per gallon. There are 231 cubic inches in a gallon, so this means you are required to be calibrated to within 2.16%. If your meter just meets this requirement on the side of giving the customer slightly more than a gallon for each gallon metered, and if you dispense 100,000 gallons per month, you could be off by 2,164 gallons per month. This represents a real cost to you for fuel purchased and given away. You might want to have the calibrations checked and corrected. If everything is tight and there are no leaks, and if your calibrations are correct on your meters, then about half of your monthly totals should be positive and half should be negative. This also applies to daily totals when looking at a monthly form.

The electronic forms are on this website under the file names “MONTHLY INVENTORY FORM.wpd” and “FUEL DELIVERY FORM.wpd” for the Word Perfect files and “inventory_control.xls” and “fuel delivery record.xls” for the Excel files. If you want hard copies of these same forms contact the department and we can send you as many as you want.

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