

## How To Detect Tank Releases Using INVENTORY CONTROL

**Important Note:** After December 22, 2008, inventory control cannot be used to satisfy the monthly release detection requirements that are enforced by the Pennsylvania Department of Environmental Protection (DEP). However, since other agencies may still require the use of inventory control and because it may be a useful tool during a suspected release investigation, the DEP has continued to publish this fact sheet.

Inventory control is an ongoing accounting system similar to balancing a checkbook. Owners balance the amount of product delivered and dispensed with the volume of product remaining in the tank. The volume remaining in the tank is determined by taking product-height readings each day the tank is in operation. Facilities, such as gasoline service stations, are generally in operation every day and thus will do daily inventory checks.

### Equipment/items needed for inventory control:

- Gauge stick or automatic tank gauge that can measure product level to the nearest 1/8 inch. A gauge stick looks like a long yard stick with markings every 1/8 inch.
- Tank calibration chart that converts product level readings (inches) into volume (gallons) of product in the tank. Tank manufacturers can usually provide a chart. There is a different chart for every tank size and shape. Manufacturers' charts normally assume level installation of tanks. Some consultants can provide charts for tilted tanks.
- Inventory control reconciliation form to record product deliveries, product withdrawals, daily gauge stick readings, and monthly release checks.
- Inventory worksheet to document and calculate gallons delivered and gallons pumped (totalizer readings).
- Drop tube controls product disturbances during deliveries.
- Water-finding paste identifies water level in the tank. It is unaffected by the stored product. The paste is put on the gauge stick from the bottom to slightly above the height where the water line is expected, but not on the stick end button. It will change color when it comes in contact with water.
- Product-finding paste (optional) works like the water-finding paste to help improve the accuracy of product level readings.

### The seven major elements of inventory control are:

- 1) Measuring product levels before and after each product delivery to the nearest 1/8 inch;
- 2) Measuring product levels each day the tank is in operation to the nearest 1/8 inch;
- 3) Reading the dispenser meter (gallons sold or removed) at the same time as gauging product level;
- 4) Keeping the dispenser meter accurately calibrated (VERY IMPORTANT);
- 5) Checking for water present in the tank and its level to the nearest 1/8 inch at least monthly;
- 6) Keeping accurate records of gauging results (product and water level) and reconciling the data monthly; and
- 7) Ensuring that product delivery is made through a drop tube that extends within one foot of the tank bottom. Fire Marshall requirements may be slightly more stringent.

A key to acceptable inventory control is proper measurement technique. Best results will be obtained when the opening used is near the middle of the tank. This will reduce the effect of a tilted tank. To

ensure accurate and consistent product level readings, the tank owner also must keep in mind the following points:

- Lower the gauge stick straight up and down, not tilted;
- Select the same tank opening each time;
- When possible, have the same person measure the product level each time; and
- Measure the product level at the same time of day. When readings are taken several times during the operating day, use the one from about the same time each day on the inventory control form.
  - Slowly lower the gauge stick vertically through the tank gauge hole, or the tank fill pipe opening if there is no gauge hole, until the stick gently touches the bottom of the tank. Avoid damaging the tank bottom (and overfill device, if present) with the stick.
  - Withdraw the gauge stick quickly after it touches the bottom of the tank to avoid “creepage” of product up the stick through adsorption. Product-finding paste applied to the stick in a light, even film can significantly improve the accuracy of the product level readings by preventing creepage. The paste changes color when product comes in contact with it, making it easier to find the product “cut” mark (wet mark left by the product).
  - Read the cut mark to the nearest 1/8 inch. Wipe the gauge stick clean (eliminate cut mark) with a cloth. Accuracy may be improved by repeating the above steps. Take the average of both readings. Record the inches (to the nearest 1/8 inch) on the reconciliation form. Now use the calibration chart for this tank to convert the inches into gallons and record the gallons on the reconciliation form.

Accurate record keeping is another key to proper inventory control. Carefully check all entries and use mathematical checks on the completed inventory control form.

Pump meter (totalizer) errors will cause a consistent, apparent loss or gain in inventory depending upon whether the meter is slow or fast. The pump meter must be properly calibrated and checked periodically to keep it as accurate as possible. All dispensing meters at retail outlets must be calibrated to local weights and measures standards.

Underground storage tanks must be gauged for water for two reasons: the presence of water in the tank may indicate a release, and water can contribute to the deterioration of tanks. A water gauge is taken in the same manner as a product gauge, except a water-finding paste must be used. The other difference in the process is the length of time the stick remains in the tank. Rather than withdrawing it quickly, the stick must remain in the tank for approximately 10 seconds for light products, such as gasoline, and 20 to 30 seconds for heavier products.

If the test results show more than 1/2 inch of water, it is recommended that the UST owner make arrangements to have all of the water removed immediately. Water monitoring should continue to ensure that the tank is not leaking.

Recording inventory data is the first step in the reconciliation process. The format for data entry and reconciliation forms may vary depending upon an owner’s preference. However, a form must have, at minimum, a place to record daily deliveries, daily withdrawals and volume of product measured each day the tank is in operation, plus an end-of-month reconciliation. See the United States Environmental Protection Agency booklet *Doing Inventory Control Right for Underground Storage Tanks* or DEP’s website for sample forms.

Note: Each release check calculation that exceeds the allowable limits must be investigated as a suspected release. See fact sheet 2620-FS-DEP1711 *Regulated Storage Tanks Corrective Action Process Investigation of Suspected Releases* for additional information.

For more information, visit [www.dep.pa.gov](http://www.dep.pa.gov), Businesses > Land > Storage Tanks.