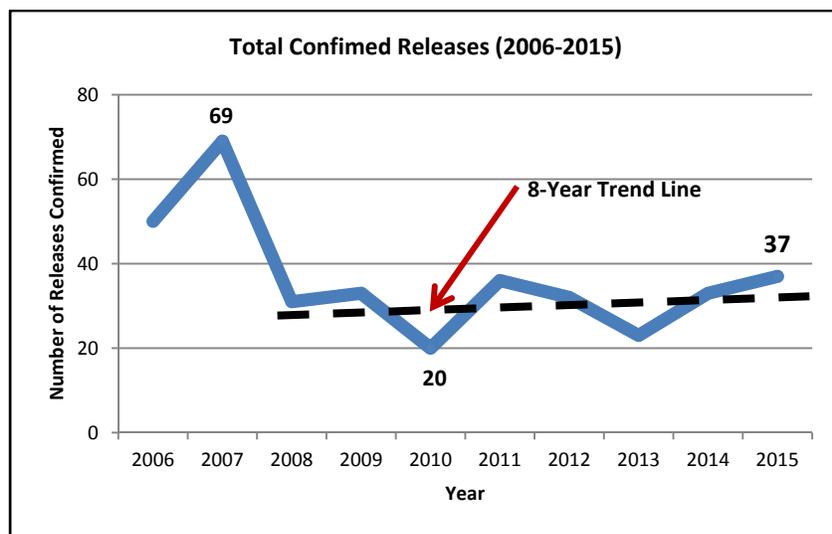


2015 Tank Autopsies

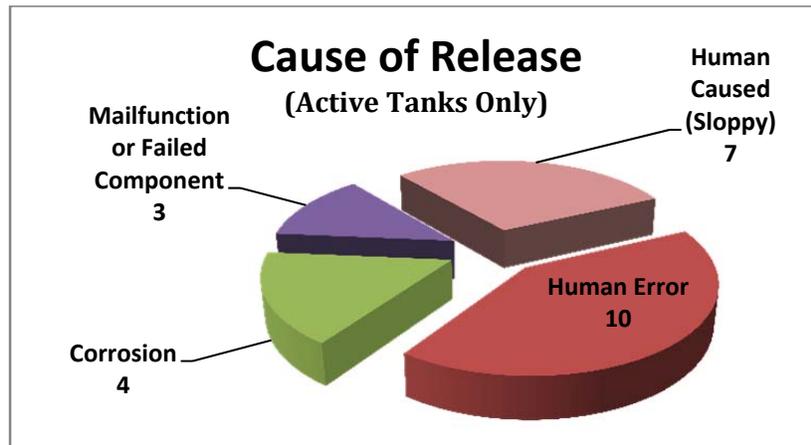
By Mike Trombetta

- Steel Rusts
- Humans Make Mistakes
- Know Your Leak Detection Limits

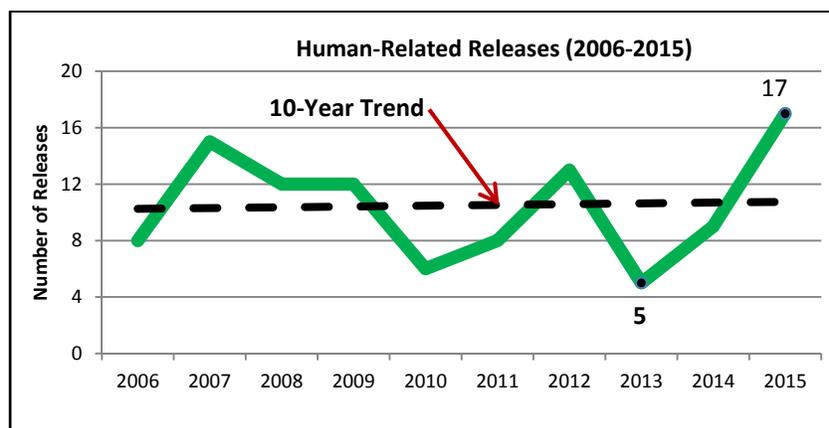
Montana experienced 37 confirmed petroleum storage tank releases last year, representing the highest number of annual releases since 2008. We hope this increase represents only a short-term spike rather than a long-term pattern. As the graph below depicts, the eight-year trend is still running between 20 and 40 new releases each year. Prior to 2007, it was typical to confirm over 50 releases per year. We don't expect to return to the flurry of releases discovered in the 1990s. Over 200 releases were reported every year during that decade, with a maximum 513 new releases reported in 1993. New equipment standards, leak detection requirements, and operator training have contributed to the current, more predictable era of underground storage tank releases. Educated professionals operating high-quality equipment help reduce past mistakes.



However, last year's numbers display a couple developing trends that are worth further evaluation. It is important to note that 24 of the 37 releases confirmed last year came from operating tanks, while 13 were historical in nature. This article will focus on further analysis of the 24 releases that came from currently operating tanks, so that we can consider areas for improvement.



First, we should look at the three main categories that resulted in releases last year. Looking at the chart above, we can see that petroleum releases due to human error are more than double that of equipment problems at a ratio of 17 to 7. Seven of these human-related releases are attributed to “sloppy” operations or procedures. These releases were not attributed to any single event, but rather to a build-up of soil contamination from spills around dispenser islands or tank fill pipes. While none of these releases probably resulted from a single large spill, it is important to note that every spill, no matter how small, are required by law to be cleaned up within 24 hours or reported to the Department of Environmental Quality (DEQ). For further information on reporting releases, you can refer to the administrative rules addressing release reporting at: <http://deq.mt.gov/Portals/112/DEQAdmin/DIR/Documents/legal/Chapters/Ch56-05.pdf>.



The other ten human-related releases are attributed to one-time events where someone did something wrong. Below is a breakdown of those human errors:

Customer Mistakes (4 total)

- 3 – Driving off with nozzle still in vehicle tank
- 1 – Disabled automatic shut-off, then leaving dispenser running

Tanker Drivers Filling Above-Ground Storage Tanks (ASTs) (6 total)

- 3 – Wrong valve open
- 2 – Filled the wrong tank
- 1 – Not paying attention

As this list illustrates, nine of these releases were due to carelessness and one was due to intentional misuse of equipment.

Customers driving off with nozzles still in their vehicle seems to be common. While only three of these releases, ranging in size from 25 to 150 gallons, were reported to DEQ last year, many others occur that do not exceed the reporting limits (over 25 gallons, or cannot be cleaned up in 24 hours). When I was filling my own vehicle the other day, I noticed the facility operator replacing a nozzle at the break-away valve due to a drive-off the day before. He told me that he sees between six and eight drive-offs every year! He added that so far, the break-away valves had worked in every case, and hardly any fuel was spilled. I was glad to hear the valves did their job but surprised to hear how many absent-minded drivers are out there!

The six AST overfills/spills are a little more disturbing, primarily because our professional drivers caused them. These releases range in size from 120 gallons to 5,000 gallons. The largest release is the most troublesome, because the driver never noticed the release; it was discovered five days later within the AST containment berm and the storm water system. It was reported that it happened in the early afternoon, but the delivery driver apparently never noticed diesel fuel (5,000 gallons total), gushing out of the top of the wrong tank. Filling the wrong tank is a mistake, but never noticing or reporting it is unacceptable.

In addition to human-related releases, we saw seven releases resulting from malfunction, failure, or corrosion of equipment. Below is a quick rundown of those releases:

Malfunctioned or Failed Equipment (3 total)

- 1 – Legs of heating oil AST failed and the tank fell over
- 1 – Dispenser nozzle didn't shut-off

1 – Leak detector developed small hole

Corrosion (4 total)

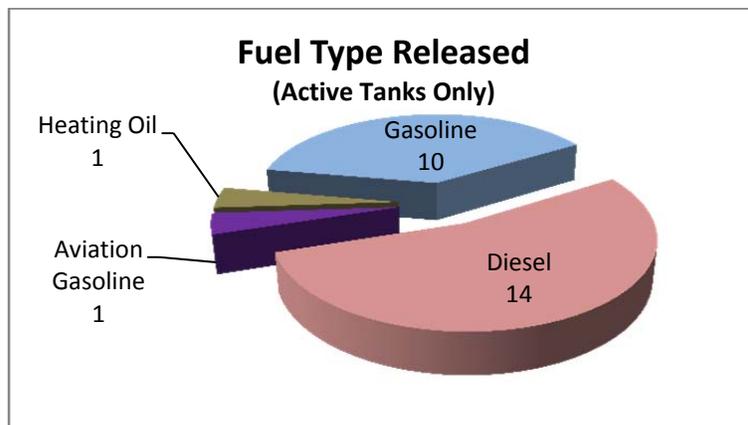
3 – Underground steel pipes with impressed current corrosion protection

1 – Steel pipe between submersible pump and leak detector in STP sump

The important point here is that steel components corrode, whether they are protected by impressed current or whether they are not in contact with soil or not. If you have an old steel system in the ground, please keep a close watch on your leak detection system. It may also be a wise business decision to replace it.

It is important to note that while leak detection equipment identified two of the corroded pipe releases, three other piping releases were not identified through leak detection equipment. One release was discovered when fuel bubbled up through the asphalt. The release rate was apparently below the three gallons-per-hour threshold for the mechanical line leak detector; if it had not been noticed, it may have continued for the better part of a month until the statistical inventory method would have detected it. For SIRs methods that are not “real-time”, it can take a minimum of 23 days’ worth of data to detect a leak of this size. Two releases were discovered only through an inspection or unrelated maintenance. One occurred when a hole developed in the leak detector itself. In this case, the fuel flowed through an electrical conduit and was discovered dripping from a junction box into an unsealed sump. The other release also occurred in the sump and not identified by the leak detector. The bottom line is that even with line leak detection in place, operators should still be on the lookout for releases.

This wouldn’t be a complete autopsy list without reporting on what products were lost last year. Below is a chart showing the products spilled in Montana from active tank systems in 2015 (includes two releases that contained two product types).



Please continue your hard work in preventing releases, particularly for older systems, and please stay vigilant detecting releases when they do occur.