Overfilling In The OPD Age

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Propane containers have a wide range of applications, from portable gas grills to mosquito control and motor vehicles. Regardless of the application, overfilling a container can always create a hazardous condition. When overfilled, a small container can easily become liquid full due to an increase in ambient heating, thereby causing the pressure relief valve to activate and cause an unintended release of propane.

For instance, our office defended a retailer who was sued following an accident involving a "dual-fuel" RV that resulted in one death and another serious injury. The RV's fuel system consisted of the traditional gasoline engine as well as a separate propane system and container mounted under the carriage. The operator could change from gas to propane with just a flick of a switch on the dashboard and could monitor propane usage via a digital light display on the dashboard. The day before the accident, a couple had the propane container filled by a local retailer and then drove across New Mexico to Texas. During the trip, temperatures climbed, and the husband reported hearing a loud "bang" followed by a "roaring" noise. After stopping the RV, he began walking toward his wife who was seated on a couch behind the driver's seat when he heard a "poof," which he reported was propane igniting. He exited the vehicle, but his wife did not. Unfortunately, the RV manufacturer had designed the propane system to vent through a line that discharged next to the RV's side door. Despite flames raging around the door, he was able to re-enter the RV and pull his wife out. The wife ultimately died from her injuries, and the husband was seriously injured.

The Plaintiff sued several entities, including the retailer, the RV manufacturer, the manufacturer of the propane fuel system, the overfill protection device (OPD) manufacturer, and the manufacturer of the container's excess flow valve. The Plaintiff's theory of liability against the retailer was that the propane container had been overfilled prior to the accident when it was cool, and subsequently became liquid full during the heat of the day when the RV has travelling over a hot roadway. Notably, the RV manufacturer had a history of similar claims against it, all involving fires that occurred when an RV was being operated over a hot roadway. An alternate ignition theory sponsored by the retailer was that a defect in the propane line leading from the container to the engine was the initial source of the leak that subsequently ignited and then caused the container's

pressure relief valve to activate.

Of course, a likely way the container could have been overfilled was if the OPD did not function as designed or was installed incorrectly. What are the chances of an OPD failing to operate properly? One study by the Department of Energy in 2010 may provide a clue. It was prompted by reported cases of propane fueled vehicles being overfilled. It consisted of monitoring a total of 105 vehicles over seven propane fleets. The study found that sixteen percent of the OPDs failed to prevent an overfill. As a result, the study made 3 recommendations: 1) that fleet operators inspect the OPDs to ensure proper operation; 2) that users be trained on proper fueling and maintenance practices and well as awareness of an overfill potential; and 3) that industry groups develop and implement standard inspections to ensure proper OPD operation. The safety advisory generated as a result of the study is available at https://afdc.energy.gov/bulletins/technology_bulletin_1008.html.

NFPA 58 sets out proper filling operations in Chapter 7 and 12. Chapter 7 deals generally with all containers. Section 7.4.4.1 provides that the OPD is intended as a back up safety measure to prevent overfills and that "other means as provided in the chapter must be used when filling containers, even if an overfilling prevention device is present and expected to stop flow into the container before the other means indicate the container is properly filled." Chapter 12, which was added to the Code in 2017, applies (with a few exceptions) to LP gas systems and ASME containers installed on motor vehicles "where LP-Gas is used for the engine propulsion of the vehicle." While the filling limits from Chapter 7 are still applicable, Section 12.4.7.4 provides that "[w]here the overfilling prevention device is used as the primary means to fill the ASME container, the fixed maximum liquid level gauge of other approved means shall be used at least once annually to verify the operation of the overfilling protection device." In other words, the OPD on a propane-fueled vehicle can be relied upon for filling, so long as its accuracy is tested at least annually. The Code also requires that the test result be documented and that the date of the next annual test must appear on a label affixed to the tank near the fill point.

In the event of an overfill and subsequent release of gas, how should you respond? PERC provides guidance in a scenario that includes an overfilled 20 pound cylinder stored in a heated garage. After notification of the incident, the four primary objectives are to first isolate ignition sources in the home, and then provide ventilation to disperse the gas, identify the source of the leak, and finally stop the leak. Because a "sniff test" is not a reliable way to determine if an area is safe, gas detectors should be used to determine the level of flammability. PERC also cautions against using ventilators to "suck out" air from a structure because doing so draws potentially flammable gas into the ventilator where it can ignite. Only positive pressure ventilation should be used to remove gas from the structure. The PERC website includes a video and other materials that describe how a retailer should respond to this scenario. http://propane.dev9.tipit.net/resource-catalog/resources/propane-emergencies-scenarios-1-cylinder-overfill-incident-at-home/

Case law provides other illustrations of the types of accidents that can occur involving allegedly overfilled cylinders. Unsurprisingly, several involve gas barbeque grills. See Sears, Roebuck and Co. v. Menegay, 907 S.W.2d 72 (Tx. Ct. App. 1995); Allstate Ins. Co. v. Sunbeam Corp., 865 F. Supp 1267 (N.D. Ill. 1994). On a related note, in April 2019 the NFPA published its "Home Grill Fire Tables" that included data on the gas grill fires between 2013 and 2017, and found an average of 800 incidents per year where the first item ignited was flammable or combustible liquids or gases, leading to 30 personal injuries and $16,000,000 in damages per year. While it is unlikely that every such incident involved an overfilled tank, it does give some idea of the overall number of incidents involving gas as the initial source of fire. Tune v. Synergy Gas Corp., 883 S.W.2d 10 (Mo. 1994), involved a cylinder used for a cutting torch that was filled by the operator until the pump motor "couldn't run anymore," because he wanted to give the customer a good deal. An overfilled cylinder was alleged to have been the cause of a motor home fire in Wright v. Farmers Co-Op of Arkansas and Oklahoma, 620 F.2d 694 (8th Cir. 1980), and a 1000 gallon tank used at a drilling site was overfilled to 92% in T-L Drilling Co. v. Northern Propane Gas Co., 516 S.W.2d 710 (Tx. Civ. App. 1974). Retailers should be aware that accidents involving overfilled containers can occur in many different settings.

What's one possible "take away" from all this? Don't give your customer a "good deal" by overfilling a container. It may be the worst deal you'll ever make.

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