

Grill Safety Issues

By John Clarke

Both propane and charcoal grills can pose hazards

As a good number of you are aware, I worked for and retired from Johnson & Johnson after a 30-year career. We have a retiree club and, sadly, there is usually an obituary section. I was recently talking with a fellow retiree in Arizona and he mentioned that we lost a longtime employee from our LifeScan division at his home in Bluffton, SC, who was “killed when his propane tank exploded.” This news was quite a shock, not just for the loss of our colleague. I was equally shocked that his tank exploded and wondered how or why this happened, so I started some investigation into propane tank safety. It led me beyond propane tanks to overall grill safety.

Are propane tanks safe and can they easily explode? As it turns out, these tanks are extremely safe and rarely, if ever, blow up. Here in Pine Knoll Shores, I spoke with Fire Department Captain David Jones on the topic of propane tanks and grill safety in general.

The Pine Knoll Shores Fire Department has indeed responded to grill fires here in town, but they have usually been the result of inattentiveness on the part of the owner. The usual circumstance is that grease from the cooking food ignites and the grill becomes too hot to open or close. Distractions increase the likelihood of a fire; it is easy to get involved in conversations, take a phone call or answer the door and forget about your grill. In a short period, the controlled grill fire can become an uncontrolled one.

Other factors can cause grill hazards. If you leave the equipment in a space that is exposed to sunlight and your apparatus is uncovered, sunlight and our salty air will corrode and degrade the integrity of your fuel lines. Usually, these lines are rubber; if they become the least bit brittle or show signs of cracking, Captain Jones strongly recommends that you replace them. Infrequent use of the grill may also allow it to become a potential danger in that a fitting might have become loose, causing gas to leak. Further, on a windy day your propane burner may get blown out, allowing the gas to build up in the cooking area. If you try to reignite without opening the grill and allowing the leaked gas to evaporate, you are most likely going to have a flame ball or, potentially, an explosion.

The Pine Knoll Shores EMS has also responded to homeowners who have burned themselves or have singed their hair. With a charcoal kettle grill that has reached a high temperature, it is necessary to “burp” open your grill top by slightly lifting the handle to allow in oxygen. Remember, oxygen is a fuel, too, and when you lift the lid, you will be adding fuel to the fire by the increased presence of oxygen. Lift gently an inch or so and let it “breathe,” and then open up all the way. A sudden opening actually releases a fireball and can surely singe the hairs on your arms, face, head or worse.

Our fire department reports that most of the grill fires that they have responded to were on charcoal grills and not propane grills. With propane, the fuel source can be shut off, but that’s not easily done with charcoal. While the fires addressed by our fire department have all been confined to the grill, we are reminded that grills should not be used on balconies of condos, as flames could easily start a significant fire. Restrictions are usually in place at condos requiring that grilling be done in designated areas or open spaces away from the building. If you live in a condo, use your grill in the approved areas or use those grills provided that are located in common areas. Captain Jones also recommends that grills in traditional homes not be used under a carport since sparks from a charcoal grill could ignite the carport ceiling. Similarly, a grill should not be used in a garage.

If you have a charcoal grill that does not have a lid, our windy environment is conducive to blowing sparks that could cause a fire downwind from your location. This scenario is most likely the key reason Pine Knoll Shores does not allow beach fires and that Pine Knoll Association clearly posts that you should not grill at the sittum.

My research shows that propane tanks are very safe, and if there is an issue with them, they are designed to vent the gas. However, if you take a tank that you just purchased at the store and open the valve, no gas is actually leaking. It is only after you hook up your tank to the grill connection(s) that the propane will begin to

flow freely. It is most likely that all propane fires are the result of operator error. In addition, many fires start as a result of a propane grill not being turned off, allowing the grill to get hot enough to ignite a nearby object (such as a wooden deck). Remember, paper burns at 451 degrees and many grills can easily get up to 600 degrees if amply fed by an energy source.

The TV show “MythBusters” put a movie special effect to the test by trying to replicate an escape method of James Bond. In the movie, 007 shoots a propane tank, causing an explosion that provides the diversion needed for his escape. It turns out that this scenario is pure Hollywood. The “MythBusters” crew used the same gun shown in the movie (Walther P99), which was not able to penetrate the propane tank. For the ultimate test, they used a 30.06 with an armor piercing round which penetrated the tank and exited—but it would not explode. They were able to pierce the casing, but it did not explode because there was no fire source. Even using a 30.06 with a tracer round did not cause an explosion. They were able to get an explosion only when they added an incendiary device rigged to ignite when the propane tank was pierced. A YouTube search will produce videos on this topic.

Propane tanks contain a flammable material, which is under pressure. While this does mean that an explosion is possible, propane tanks are sturdy and well tested—and have safety precautions set into them to prevent explosions. This design makes propane explosions very, very rare. To further prove the point, let’s examine the chemistry and physics to understand how a tank might explode.

A propane tank explosion is a type of BLEVE (Boiling Liquid Expanding Vapor Explosion). This type of explosion occurs when the pressure in the tank exceeds that which it can safely vent. Eventually, rising pressure will cause the tank to rupture and burst. A propane BLEVE occurs mainly when it is exposed to high temperatures. The temperature heats the liquid propane inside the tank, causing it to expand until the stress it places on the tank becomes too high. When propane gas leaks from the tank in a fire, it will ignite and can cause an explosion.

All propane tanks are equipped with a relief valve. When the pressure inside a tank rises, the relief valve opens and starts venting gas to bring the pressure down. According to sciencing.com, it would take direct exposure to very high temperatures (such as in a fire) for pressure to become so high as not to be controlled by the relief valve. A heat source would have to be constantly against the tank in order to heat it high enough to explode.

In the sad case of the unnecessary death that occurred in Bluffton, SC (a near coastal town, too) the fire department first reported that his propane tank exploded and he was killed as a result. Upon further investigation by their fire marshal and coroner, it was learned that his home grill was connected to an underground propane tank and it was clearly fine and intact. So what happened? His grill line had most likely corroded and had weakened, or there was a loose connection at the grill. Possibly the flame went out—and when he hit the igniter an explosion occurred which was strong enough to destroy his grill. The coroner ruled that the death resulted from blunt force trauma and not a propane tank explosion. Had he opened the grill lid and allowed the propane to dissipate, he could then have reignited the grill, but there may still have been a problem with gas leaking at the hose connection.

The bottom line: be vigilant when you are cooking outdoors on your grill, whether it is charcoal or propane. Keep a check on your propane burners to be sure they aren’t blown out by the wind. If it is windy, consider moving the grill to an appropriate protected area. If you own a rental property, be sure renters know about grills and grill safety. A little vigilance will ensure that all goes well with the grill.

Important note: Captain Jones also reminds our readers that many here have a propane hot water tank with a pilot light. If you have to relight the pilot, be sure to use caution and let the area vent before relighting the pilot per the instructions on the tank. If unsure how to relight your pilot, you can contact the fire department or your propane supplier for assistance.

In Memoriam

Shirley Schaeffler

Betty Lou Schlatterer