

# SAFETY NOW

December 2019—Issue 407

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## Propane: This Common Fuel Can Be Uncommonly Deadly

In Ghent, West Virginia, two propane service technicians arrived at the Little General gas station and convenience store. The store had recently changed its propane supplier, from Ferrellgas to Thomson Gas and Electric Services. The technicians were there to transfer the propane from the Ferrellgas tank, which was located against the building's rear wall, under the eaves, to the new Thomson tank, located 10-feet away.

At about 9:30 a.m., the senior technician left briefly, while the junior technician kept working. At about 10:25 a.m., he removed a plug from the Ferrellgas tank's liquid withdrawal valve, and was surprised when liquid propane unexpectedly released and began accumulating around the tank. The propane vapors traveled into the building; at about 10:30 a.m., a deliveryman noticed that there was a strong odor in the store and that employees' eyes were watering.

At about 10:40 a.m., the junior technician called 911. The captain of the Ghent Volunteer Fire Department arrived minutes later, along with an ambulance, two emergency medical technicians (EMTs), the returning senior technician, and another volunteer firefighter. The fire captain, one of the EMTs, and the senior technician all went to assist the junior technician. The second EMT and the firefighter went to the front of the store to evacuate the four employees who were still inside.

At 10:53 a.m., the whole thing blew up.

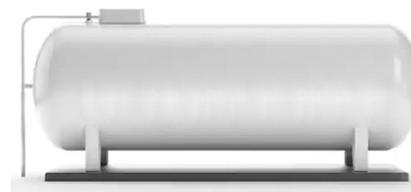
The four people who were next to the Ferrellgas tank—the fire captain, the two propane service technicians, and the EMT—were killed. The four store employees, the firefighter, and the second EMT were all injured. The ambulance and several other parked vehicles were completely destroyed.

Propane tanks, like the 500-gallon Ferrellgas tank involved in the Little General incident, are common, making them familiar and easy to overlook from a safety standpoint. Propane tanks like these are not always covered by the Process Safety Management standard—another invitation to overlook their potential hazards. Propane tanks, however, are potentially deadly.

### OSHA Requirements

OSHA regulates propane tanks under 29 CFR 1910.110, Storage and Handling of Liquefied Petroleum Gases (a category that includes propane and a few other gases). The standard requires the following:

- That propane gas be “odorized” so that it can be detected by smell at about one-fifth of its explosive limit



# 2020 *Safety Now* Meetings

**W**e know you count on your *Safety Now* Meeting Planners to help you train your workers on the critical safety information they need to know. Here are the topics for the 12 Meeting Planners, Quizzes, and Handouts that you'll receive this year in *Safety Now*.

January	Keep Your (Machine) Guard Up
February	First, Read the Label
March	Keep Your Community Safe when You Dispose of Hazardous Waste
April	Keep Your Workspace Clean and Safe
May	Follow Ladder Safety Rules to Reach New Heights
June	Don't Bug Out: Keep Bugs Off
July	Point the Route to Safety with Signs
August	Never Ignore a Near Miss Warning
September	Don't Repeat These Ergonomic Mistakes
October	Know Your Extinguisher ABCs and Ds
November	Know the Hazards of Compressed Gases
December	Drive Safely in Ice and Snow

- That propane tanks, regulators, valves, and connectors meet applicable design safety standards
- That repairs and modifications to propane tanks be made by the manufacturer
- That container labels include: the standards the container was built to; whether the container is designed for underground or aboveground use; the name and address of the supplier; the water capacity of the tank in pounds or gallons; the pressure in p.s.i.g. that it is designed to withstand and the not-to-exceed vapor pressure of any contents; its tare weight; its fill level; and its outside surface area in square feet
- That containers be installed at safe distances from surrounding structures and other tanks
- That installation, valves, accessories, pipes, tubing, fittings, hoses, safety devices, vaporizers, housings, pumping systems, and electrical systems meet design safety and compatibility requirements
- That an attendant be present during the transfer of gas to or from the tank, and that precautions be taken against fires during transfers

- That personnel who install, remove, operate, and maintain tanks receive training
- That appliances using LP gas meet design and installation safety requirements

Additional requirements apply to propane transport operations, charging plants, propane used as a motor fuel, and LP gas service stations.

## Could This Happen To You?

What do you need to know in order to keep yourself and your workers safe from the hazards that a propane tank can pose?

**Location.** The Ferrellgas tank was right up against the building, which enabled the vapors to enter the building, where they found an ignition source (was it the pizza ovens? Had workers turned on fans in the building to clear the vapors? No one seems to know for sure). Propane tanks should be located at least 10 feet from commercial or residential buildings. Larger tanks require larger clearance distances. They should also be installed in areas away from vehicular traffic.

**Protection.** Propane tanks and their associated piping must be protected against tampering and damage. A propane tank explosion in

Albert City, Iowa, killed two firefighters and injured seven others. The tank caught fire when teenagers riding ATVs struck the unprotected surface piping of a propane tank, creating both a leak and the spark needed to ignite it. Propane tanks and piping should be protected by locked perimeter fencing.

**Training.** Given that there are more than two million commercial, industrial, and agricultural propane installations in the United States, and more than 14 million residential propane customers, propane service technicians, emergency responders, and 911 operators should all know how to respond appropriately to propane emergencies. Inadequate training contributed to the Little General explosion in several ways:

- The junior propane service technician on the site had been hired only 45 days before, and had no training, yet he was left to work without supervision. His failure to recognize a defect in the withdrawal valve

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## SAFETY NOW

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# Meeting Planner

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MEETING OUTLINE

## Prevent Medication Errors

### Meeting Objective

All medications—whether available through a prescription or over the counter—present a double-edged sword. On one hand, they relieve symptoms that might otherwise interfere with your workers' productivity. On the other hand, they have the potential to be dangerous if they're not taken correctly. This meeting planner will give your workers the information they need to minimize potentially unsafe side effects and maximize the important benefits that medications have to offer.

### Ice Breaker (Sample Speech)

Both over-the-counter and prescription medications can affect your ability to work safely—by making you drowsy when you need to be alert, or by causing you to become agitated—even if you take them in the recommended dosages. If you're taking any type of medication, you need to be aware of its side effects and restrictions to avoid jeopardizing your own or someone else's safety.

### Discussion Guide

Be an informed consumer. The more information you have, the better able you'll be to prevent medication errors and take care of yourself. Before you take a prescription medication, have your doctor, nurse, or pharmacist answer the following questions:

- What are the brand and generic names of the medication?
- How much should I take and how often?
- When is the best time to take it?

- How long will I need to take it?
- What side effects should I expect, and what should I do if they happen?
- What should I do if I miss a dose?
- Does this medication interact with my other medications or foods?
- Where and how should I store it?

These precautions don't only apply to prescription medications. When you buy over-the-counter medication, read the labels carefully, because it might contain ingredients that you should not ingest due to allergies or other restrictions. An over-the-counter medication could interact with your other medications or be incorrect for your symptoms. Don't hesitate to ask your pharmacist for help if you have trouble selecting the right product.

Although your doctor, nurse, or pharmacist is the best source of information about medications, there are some general rules about medication safety that you should keep in mind:

Store medications in their original containers. Many pills look alike, so by keeping them in their original containers, you'll know which is which and how to take them.

Never take someone else's prescription medication. Medication affects everyone differently, depending on a variety of factors—such as, your size and age, other medications you may be taking, your diet, and your health history.

Take only recommended dosages. Taking twice the recommended dosage won't make you feel better twice as fast, and it could be unsafe.

Don't use any medication past its expiration date, even if it's only a matter of days or weeks. Some drugs become toxic after they expire.

Don't store medications in the bathroom medicine cabinet or in direct sunlight. Humidity, heat, and light can all affect a medication's potency and safety.

Don't chew, crush, or break any capsules or tablets unless your pharmacist or health care professional informs you that it's okay to do so. Some long-acting medications can be absorbed into your body too quickly when chewed, which could be unsafe.

If you're taking a liquid medication, use only the cup or other measuring device that came with it. Dosing errors can happen if you use a different cup, or if you use the cup with other liquids, because the cups often are different sizes or have different markings. Also, household teaspoons and tablespoons are not very accurate, which is important with many medications.

### Closing (Sample Speech)

Following these commonsense precautions can help you to work safely while you're taking medications. If you experience symptoms or side effects—such as drowsiness, dizziness, or blurred vision—that, however, could make it difficult or dangerous for you to perform your job, see me immediately. We may be able to assign you to an alternative job that could protect everyone's safety. ■

# Safety Meeting Quiz

Employee Name: \_\_\_\_\_ Signature: \_\_\_\_\_

ID Number: \_\_\_\_\_ Department: \_\_\_\_\_

Trainer: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_



## Prevent Medication Errors

1. Prescription medications are more dangerous than over-the-counter medications.  
 True  False
2. Issues to address with your pharmacist or health care professional about medications include
  - A. the best time to take the medication.
  - B. how to handle side effects.
  - C. what to do if you miss a dose.
  - D. all of the above.
3. Always read the label before choosing an over-the-counter medication.  
 True  False
4. If you're having trouble choosing the right over-the-counter medication, you should
  - A. ask the pharmacist.
  - B. ask your health care professional.
  - C. either A or B.
  - D. ask a friend or co-worker who has a similar illness.
5. Sources of information on medication include your physician and your pharmacist.  
 True  False
6. You should never use someone else's prescription medication.  
 True  False
7. If your medication isn't relieving your symptoms, you should
  - A. increase the dosage.
  - B. see your health care professional or pharmacist.
  - C. stop taking the medication.
  - D. switch to another medication as soon as possible.
8. It's okay to ingest medicine as long as it's less than a week past its expiration date.  
 True  False
9. If you have trouble swallowing your pills, you should
  - A. crush the pill and mix it into a glass of water.
  - B. try to chew it.
  - C. call your health care professional or pharmacist.
  - D. none of the above.
10. If you lose the measuring cup that came with your liquid medication, it's okay to substitute a teaspoon.  
 True  False

# SAFETY NOW

## Safety Meeting Reminder

### Medications and Machinery Don't Mix

Know the potential side effects of medication before you take it. To avoid problems, follow these rules:

- Follow recommended dosages. Twice the tablets probably won't make you feel twice as good.
- Find something that works and stick with it. After a week, symptoms should subside and side effects wane.
- Read labels carefully. Heed any special precautions.
- Stay away from combination medications. Minimize side effects by avoiding multi-ingredient products.



# ✓ Off-the-Job Safety Tips

## Celebrate Safely—Prevent Alcohol-Related Accidents

It's holiday season, and that means parties—and, often, partying includes alcohol. Despite it being common knowledge that alcohol can impair driving ability, a lot of people don't seem to have taken this fact to heart. The statistics are sobering:

- Adults drank too much and drove about 121 million times per year—over 300,000 incidents of drinking and driving a day.
- On average, two in three people will be involved in a drunk driving crash in their lifetime.
- In 2017, 10,874 people died in drunk driving crashes—one every 48 minutes—and more than 300,000 were injured in drunk driving crashes. Every day, about 800 people are injured in a drunk driving crash.
- In 2017, 15 percent of all drivers involved in fatal crashes during the week were drunk. This almost doubles to 28 percent on weekends.
- Alcohol-related crashes in the United States cost about \$132 billion a year.

December is National Drunk and Drugged Driving Prevention Month: a perfect time to learn more about what you can do to help reduce the magnitude of this problem. The information below will tell you how to be a responsible host and partygoer, and how to handle difficult situations when friends have been drinking excessively.

### It Doesn't Take Much.

The term drunk driving is actually inaccurate, according to the Insurance Institute for Highway Safety. Many alcohol-impaired drivers don't appear to be drunk. That's because even small amounts of alcohol can impair the skills involved in driving—judgment is the first thing to go, and motor skills are next. The popular notion that the problem is related to drunk drivers, however, has allowed many drinking drivers to decide that they aren't part of the problem.

In fact, one drink—a 12-oz. can of beer, a 5-oz. glass of wine, or a 12-oz. wine cooler—can impair your ability to drive. A blood alcohol content (BAC) as low as .02, or 20 milligrams of alcohol per 100 millimeters of blood, increases the likelihood of a crash. The probability of a crash rises significantly at .05 percent BAC, and increases rapidly after .08 percent. For drivers with BACs above .15 percent on weekend nights, the likelihood of being killed in a



single-vehicle crash is more than 380 times higher than it is for nondrinking drivers.

### You Can Make a Difference

So what can you do, besides choosing not to drive when your abilities could be impaired by alcohol? Mothers Against Drunk Driving offers the following suggestions.

- Prepare plenty of food for your party guests so that they won't drink on empty stomachs.
- Offer a variety of nonalcoholic beverages for the designated driver and others who prefer not to drink alcohol.
- Don't let your guests mix their own drinks. Instead, choose a reliable "bartender" to help you keep track of the size and number of drinks that guests consume.
- Close the bar 90 minutes before the party ends and serve dessert with coffee. The key here is time, not coffee. Only time sobers up someone who has been drinking.

If, in spite of your best efforts, some of your guests have had too much to drink, then drive them home, arrange for a ride with another guest who is sober, call a taxi, or invite them to stay over. Approaching this issue can be awkward, and the first time is always the hardest. Take your guest or friend aside, and firmly but politely tell them that you cannot let them drive in their current condition. ■

# How Does the Flu Affect Your Workplace?

Every month, the National Institute for Occupational Safety and Health (NIOSH) monitors the prevalence of health-related workplace absenteeism among full-time workers in the United States. (A full-time worker is defined as an employed person who reports usually working 35 or more hours per week.) NIOSH recently published the results of workplace absenteeism surveillance analyses conducted during the high-severity influenza season from October 2017 to September 2018.

Absenteeism increased sharply in November, peaked in January and, at its peak, was significantly higher than the average during the previous five seasons. Persons especially affected included male workers; workers aged 45 to 64 years; workers living in Department of Health and Human Services (HHS) Regions 6 (Arkansas, Louisiana, New Mexico, Oklahoma, and Texas) and 9 (Arizona, California, Hawaii, and Nevada); and those working in management, business, and

financial; installation, maintenance, and repair; and production and related occupations.

Because workers often share office space and equipment and have frequent face-to-face contact, the workplace can be an important setting for influenza transmission. Nearly two thirds of adults in the United States participate in the workforce, and estimates of influenza attack rates for working-aged adults (18 to 64 years) can be as high as 14.3 percent in a given influenza season. Surveillance of workplace absenteeism can provide an important supplementary measure of a pandemic's impact because conventional morbidity and mortality statistics might not fully reflect the disruption caused to the social and economic life of the community. Workplace absenteeism is also one component of the World Health Organization's Pandemic Influenza Severity Assessment impact indicator.

Vaccination and nonpharmaceutical interventions recommended for everyday use, such as staying home

when sick, covering coughs and sneezes, practicing hand hygiene, and routinely cleaning frequently touched surfaces, are the most effective ways to prevent influenza transmission during seasonal epidemics, both in the community and in the workplace. During a pandemic, additional personal and community nonpharmaceutical interventions might be recommended, including social distancing measures in workplaces.

NIOSH makes current and past seasons' absenteeism surveillance results available online ([www.cdc.gov/niosh/topics/absences/default.html](http://www.cdc.gov/niosh/topics/absences/default.html)). Employers might wish to consult these results when developing and targeting prevention messages and use them to monitor long-term trends for their workplaces between pandemic periods. As a workplace leader, you can help minimize the flu's impact on your workplace by stressing the importance of vaccination and good hygiene to your crew. ■

*Continued from page 2*

(which could have been remedied with proper training) contributed to the disaster.

- The 911 operator had no prompt card available (the propane industry has prepared one, but that 911 operator did not have it) for dealing with a propane release.
- The fire captain had received only four hours of hazardous materials training almost a decade earlier, with no refresher training and no specific training in dealing with propane releases.

## **The Danger of Natural Disasters**

Propane tanks are subject to damage by natural disasters, including

wildfires, floods, and hurricanes. To protect propane tanks against wildfire damage, take the following steps:

- Keep an area of 10 feet around the tank clear of anything that could burn, including long grass, leaves, and trash.
- Use weed and grass killer to control vegetation around the tank.
- Spread gravel or other noncombustible base material around the tank.
- Make sure that the tank is painted a heat-reflective color.

In a flood, propane tanks can float, breaking away from their piping. Propane tanks should not be located in areas that are known to flood; if a propane tank is located in an area

that could flood, or in a coastal area where it could be subject to hurricane-force winds and storm surges, these precautions can help:

- Have cables installed to anchor the tank to a concrete pad or blocks.
- Make sure that the regulator vent is protected.
- Keep the tank filled in rainy weather.
- If floodwaters are rising and threatening the tank, close the tank service valve.

After a flood, do not re-enter the area if you can smell propane, and do not place the tank back in service until it has been inspected and leak-tested. ■



## You Be the Judge

# Whose Job Was It, Anyway?

**A** general maintenance mechanic at a hospital in Jersey City, New Jersey, was walking down a hallway in the labor and delivery wing when he noticed that a round overhead fluorescent light was out. He stopped, set up his A-frame ladder, and began to work on the light fixture. On the hospital's security video, the mechanic can be seen standing on the ladder, arms above his head, working on something above him. A row of lights running down the centerline of the long hallway is illuminated, as indicated by their reflection on the floor.

Around the 7-second mark of the security video, all of the lights suddenly go out, and the mechanic falls off the ladder to the ground. Medical personnel who were passing by the ladder without concern quickly jump away from the ladder with surprise. The mechanic passed away a few weeks later due to this incident. The autopsy report indicated that the mechanic's death was an accident caused by blunt impact injuries to the head, with a contributory cause of electrocution.

The hospital convened a root cause analysis committee shortly after the incident. The committee determined that the mechanic should not have been working on the light fixture; he had no written work order or verbal instruction from a supervisor directing him to do so.

OSHA also sent an industrial hygienist (IH) to investigate the incident. The IH interviewed many members of the hospital's staff, including another general maintenance mechanic. The mechanic stated that he worked on fluorescent light fixtures. The mechanic also stated that he "worked live," meaning working on live electric current, on multiple occasions. The IH found written work orders in the record establishing that both mechanics were assigned to address light fixtures and "replace ballasts" on multiple occasions. Based on her findings, the IH cited the hospital for multiple serious violations of OSHA's electrical safety and training standards found in 29 CFR 1910 Subpart S.

### At Issue

The hospital contested the citations, arguing that the workers were not authorized to perform electrical work.

Did the employer direct unqualified workers to perform electrical work?

### The Decision

Yes. The hospital's associate vice president and the director of facilities both testified that neither mechanic was authorized to work on exposed live parts; however, the mechanic's death and other evidence clearly showed that the hospital's facilities department often failed to follow proper protocol when working with electrical circuits. The hospital's records showed that neither mechanic was trained in lockout/tagout, even though the work order record showed that both mechanics were assigned to change ballasts at least 10 times before this incident. In addition, the surviving mechanic testified that he wore no electrical protective gloves when performing ballast changes.

The hospital showed its written hazardous energy control procedures to the IH during the investigation. The IH noted that it was a generic procedure, intended to be tailored to the employer's site-specific equipment, which had not been done. The procedures had pages that were not filled out and had nothing specific to the light fixtures that the general maintenance mechanics changed. All of the citations were upheld.

One of the issues the incident turned up was what the judge characterized as a "murky" chain of command with respect to who was responsible for ensuring that only appropriately trained employees worked on light fixtures. The associate vice president of support services was responsible for administrative oversight of a number of departments, including the facilities department. The director of facilities, who was new at the time of the incident, reported to him. According to the director of facilities, all 22 facilities department employees, including the two mechanics and the facilities coordinator, reported directly to him. He stated that the facilities coordinator was responsible for making work assignments, but had no supervisory authority. The facilities coordinator, in contrast, claimed that the general maintenance workers reported directly to him—but that it was the facilities director's job to make sure everyone was appropriately trained. Ultimately, no one was clear on whose job it was to make sure that unqualified workers did not do electrical work. The employer's failure to identify whose job that was, and to make sure the job was done, was undoubtedly a contributing factor in the worker's death. ■

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