LARGE TANK SAFETY

WHAT IS PROPANE?

Propane (also called LPG—liquefied petroleum gas—or LP gas) is a widely used fuel. It is transported and stored as a very cold liquid, and can cause a "freeze burn" or frostbite if it contacts the skin. The liquid propane is turned into a gas inside a tank or a cylinder. In its natural form, propane is colorless and odorless. To make propane easier to detect in the event of a leak or spill, manufacturers deliberately add a chemical compound to give it a distinctive smell.

Propane is flammable when mixed with air (oxygen) and can be ignited by many sources, including open flames, smoking materials, electrical sparks, and static electricity.

Propane vapors are heavier than air. For this reason, they may accumulate in low-lying areas such as basements, crawl spaces, and ditches, or along floors. However, air currents can sometimes carry propane vapors elsewhere within a building.

HOW DOES PROPANE GET TO YOUR HOUSE?

It is important to become familiar with the parts of your propane system so that you can take quick and appropriate action in case of a leak or other emergency. The illustration at left shows a typical home propane system.

Propane is delivered to your home as a very cold liquid and is pumped into a specially designed storage tank (A). The liquid changes to gas before it leaves the tank. Propane tanks are typically painted white or silver to reflect heat and prevent the pressure inside the tank from getting too high.

If you have an underground tank, only the cover (B) will be visible above ground.

The cover on top of the tank protects several components from weather and physical damage, including:

- The tank shut-off valve (C), which you can close to stop the flow of propane to your home in case of a leak or other emergency.
- The regulator (D), which controls the pressure of the propane gas coming out of the tank.
- The safety relief valve (E), which will pop open automatically if the pressure inside the tank gets too high. The valve will close again when the pressure returns to normal.
- The tank gauge (F), which shows the percentage of propane in the tank.

Propane flows from your tank to your home through pipes (G), most of which run underground.

You may also have a secondary pressure regulator (H) on an outside wall of your home to further adjust gas pressure.

A shut-off valve (I) in each pipe can be closed to stop gas flow to an individual appliance.

An appliance connector (J) is the final segment in the gas piping system. This specially designed flexible tube—typically 2 or 3 feet long—carries gas from a pipe to the back of an appliance (K).

WHAT IS FLAMMABLE VAPOR IGNITION?

FLAMMABLE VAPORS ARE A SERIOUS SAFETY HAZARD!

- Vapors from flammable products—such as gasoline, kerosene, paint thinner, and solvents —can be ignited accidentally by the pilot light of a propane appliance.
- Flammable vapors are often heavier than air and may travel along the ground and collect in low or confined areas (such as a basement or pit). Sometimes the vapors may follow air currents in the building to higher levels. Any source of ignition in these areas (such as a pilot light, spark, heater element, or electric motor) could cause an explosion or a fire.

TO HELP REDUCE THE RISK OF FLAMMABLE VAPOR IGNITION:

- Store flammable liquids in well-sealed containers outside.
- Do not use gasoline, cleaning fluids, oil-soaked rags, or other flammable liquids inside a building where propane appliances are located.

PROPANE VAPORS CAN BE DANGEROUS. Propane vapor is also combustible and can ignite explosively. Keep propane storage containers closed. Never store propane cylinders in an enclosed area, or near a heat or ignition source.

WHAT SHOULD I DO IF I SMELL GAS?

1. **NO FLAMES OR SPARKS!** Immediately put out all smoking materials and other open flames. Do not operate lights, appliances, telephones, or cell phones. Flames or sparks from these sources can trigger an explosion or a fire.
2. **LEAVE THE AREA IMMEDIATELY!** Get everyone out of the building or area where you suspect gas is leaking.
3. **SHUT OFF THE GAS.** Turn off the main gas supply valve on your propane tank if it is safe to do so. To close the valve, turn it to the right (clockwise).
4. **REPORT THE LEAK.** From a neighbor's home or other nearby building away from the gas leak, call your propane retailer right away. If you can't reach your propane retailer, call 911 or your local fire department.
5. **DO NOT RETURN TO THE BUILDING OR AREA** until your propane retailer, emergency responder, or qualified service technician determines that it is safe to do so.
6. **GET YOUR SYSTEM CHECKED.** Before you attempt to use any of your propane appliances, your propane retailer or a qualified service technician must check your entire system to ensure that it is leak-free.

HOW TO RECOGNIZE THE SMELL OF PROPANE

Propane has a strong, unpleasant smell like rotten eggs, a skunk's spray, or a dead animal. Propane manufacturers add the smell deliberately to help alert customers to propane leaks, which can create a safety hazard.

TAKE THE SNIFF TEST. Teach everyone in your home or building what propane smells like. You can use the blue circle on the page opposite of the inside front cover. Or, ask your propane retailer for a demonstration.

CAN YOU SMELL IT?

- It may be hard for some people to smell propane for the following reasons:
- They have a cold, allergies, sinus congestion, or another medical condition.
- Their sense of smell is reduced due to use of tobacco, alcohol, or drugs.
- Tobacco smoke, cooking odors, and other strong odors can mask the smell of propane.
- As people age, their sense of smell can become less sensitive.
- If the smell of propane is present in the air over a period of time, "odor fatigue" can occur. The nose "gets tired," and a person no longer smells the propane odor.
- The propane smell may not be strong enough to wake up someone who is sleeping.
- The propane smell may be in a location (basement or attic) where it is not detected by people in other areas of the building.
- A phenomenon called "odor loss" can occur—an unintended reduction in the concentration of the odor of propane (as explained on page 8).

WHAT IS ODOR LOSS?

ODOR LOSS ALSO CAN DIMINISH PROPANE'S SMELL.

Odor Loss. On rare occasions, propane can lose its odor. Several things can cause this including:

- Air, water, or rust in a propane tank or cylinder can reduce propane odor concentration.
- If the propane is leaking underground, its passage through soil may reduce the smell of propane.
- The propane odor may stick to the inside surfaces of gas piping and distribution systems and possibly other materials.

Since there is a possibility of odor loss or problems with your sense of smell, you should respond immediately to even a faint odor of gas.

IF YOU ARE CONCERNED that you or others in your home may have difficulty smelling propane, consider buying one or more propane gas detectors.

FACTS ABOUT PROPANE GAS DETECTORS

CONSIDER INSTALLING GAS DETECTORS.

- Under some circumstances, you may not smell a propane leak. Propane gas detectors are designed to sound an alarm if they sense the presence of propane. Their operation does not depend on the concentration of odorant in the air, just the propane concentration at the detector.
- We recommend that you consider installing one or more propane gas detectors. This is important if you or others in your home have difficulty smelling propane, or if appliances are in little-used areas in your home where the smell of propane might not be detected. Detectors can provide an additional measure of security.

DETECTOR QUALITY IS IMPORTANT. Be sure the units you buy are listed by Underwriters Laboratories (UL). To be sure propane gas detectors operate properly, install and maintain them as the manufacturer recommends.

TRUST YOUR NOSE. Never ignore the smell of propane, even if no detector is sounding an alarm to signal

the presence of propane. However, if a detector is sounding an alarm, treat it as an emergency and act immediately, even if you do not smell the propane.

CHECK YOUR PROPANE SYSTEM. Even if you install gas detectors, have a qualified service technician inspect your propane system and propane appliances periodically.

FACTS ABOUT CARBON MONOXIDE (CO)

WHAT IS CARBON MONOXIDE? Carbon monoxide (CO) is a colorless, odorless, tasteless, and toxic gas. Smoking a cigarette; idling a gasoline engine; and burning fuel oil, wood, kerosene, natural gas, and propane all produce CO. High levels of CO can be produced when fuels are burned incompletely.

WHERE DO HIGH LEVELS OF CO COME FROM? High levels of CO can be generated by appliances that are defective or improperly installed or maintained. CO can also enter a home if an appliance venting system or chimney becomes blocked (for example, by a bird's nest).

CO CAN BE DEADLY! High levels of CO can make you dizzy, give you headaches, or cause flu-like symptoms (see the list below). In extreme cases, high levels of or extended exposure to CO can result in brain damage or death. Young children; the elderly; people with heart disease; and those under the influence of alcohol, drugs, or medication are particularly susceptible to CO poisoning.

Symptoms of CO poisoning include:

• Headache • Dizziness • Shortness of breath • Nausea • Fatigue

CO DETECTORS CAN IMPROVE SAFETY. CO detectors are designed to sound an alarm when they sense excessive levels of CO in the air. We recommend that you consider installing a CO detector listed by UL on each level of your home. Be sure to follow the manufacturer's instructions regarding installation, location, and maintenance. These devices can provide an extra measure of safety.

IF YOU SUSPECT CO IS PRESENT, ACT IMMEDIATELY!

1. If you or a family member shows physical symptoms of CO poisoning, get everyone out of the building and call 911 or your local fire department.
2. If it is safe to do so, open windows to allow entry of fresh air, and turn off any appliances you suspect may be releasing the CO.
3. If no one has physical symptoms of CO poisoning, but you suspect that CO is present, call your propane retailer or a qualified service technician to check CO levels and your propane equipment.

TO HELP REDUCE THE RISK OF CO POISONING:

- Have a qualified service technician check your propane appliances and venting systems annually, preferably before the heating season begins.
- Install UL-listed CO detectors on every level of your home.
- Never use a gas oven or range-top burners to provide space heating.
- Never use portable heaters indoors, unless they are designed and approved for indoor use.
- Never use a barbecue grill (propane or charcoal) indoors for cooking or heating.
- Regularly check your appliance exhaust vents for blockage.

SIGNS OF IMPROPER APPLIANCE OPERATION THAT CAN GENERATE HIGH CO LEVELS:

- Sooting, especially on appliances and vents
- Unfamiliar or burning odor
- Increased moisture inside of windows

WHAT HAPPENS IF I RUN OUT OF GAS?

DON'T RUN OUT OF GAS. serious safety hazards, including fire or explosion, can result.

- If an appliance valve or a gas line is left open when the propane supply runs out, a leak could occur when the system is recharged with propane.
- Air and moisture could get into an empty or depleted storage tank, which can cause rust build-up inside the tank. Rust can decrease the concentration of the odor of propane, making it harder to smell.
- If your propane tank runs out of gas, any pilot lights on your appliances will go out. This can be extremely dangerous if not handled properly.
- **A LEAK CHECK IS REQUIRED.** In many states, a propane retailer or a qualified service technician must perform a leak check of your propane system before turning on the gas.
- **SET UP REGULAR DELIVERY.** Establish a regular delivery schedule with your propane retailer. Also, periodically check the fuel gauge on your propane tank. If the fuel level drops below 20%, call your propane retailer.

WHAT SHOULD I DO IF MY PILOT LIGHT GOES OUT?

IT IS STRONGLY RECOMMENDED THAT A QUALIFIED SERVICE TECHNICIAN LIGHT ANY PILOT LIGHT THAT HAS GONE OUT.

WHAT IS A PILOT LIGHT? Many propane appliances may have a pilot light—a small, constantly burning flame inside the appliance. (Appliances without a pilot light often have electronic ignition instead.) If your appliance has a pilot light, it is an important safety feature. The pilot light ignites the main burner when needed.

WHEN A PILOT LIGHT GOES OUT. A pilot light that repeatedly goes out—or is very difficult to light—may be signaling that there is a problem with the appliance or with your propane system. If this occurs, do not try to fix the problem yourself. Contact a qualified service technician to evaluate the appliance. Accidents and serious injuries can occur when customers attempt to fix a pilot light problem on their own.

IF YOU LIGHT A PILOT LIGHT YOURSELF, you are taking the risk of STARTING a fire or AN explosion. Many serious injuries occur when people attempt to light pilot lights. Proceed with great caution and follow these rules:

Carefully follow all of the manufacturer's instructions and warnings concerning the appliance.

If the appliance is in a basement or closed room, thoroughly ventilate the area before lighting the pilot.

- **DO NOT** smoke or have any source of ignition (such as flames or spark-producing materials) in the area before lighting the pilot.
- Be especially alert for the smell of propane. Sniff at floor level before lighting a pilot.
- **IF YOU SMELL GAS, DO NOT LIGHT THE PILOT LIGHT.**

- **DO NOT** allow any extra or unnecessary people (especially children) to remain in the room or area of the building where you are lighting a pilot.
- **DO NOT** try to light pilot lights in any area where other odors may make it difficult for you to detect the smell of a propane leak.
- **DO NOT** light the pilot if a musty or damp smell persists. These conditions can mask the smell of propane.
- **DO NOT** apply force or use tools on the pilot light or its control. This could cause damage that leads to gas leakage. Use only your hands to operate knobs, switches, or buttons.
- **DO NOT** attempt to let air out of gas lines by opening a valve or fitting inside a building or enclosed space. You may release gas and not be able to smell it.
- **DO NOT** apply oil to a sticky knob or button on a gas control valve. Oil can cause the control valve mechanism to stick and malfunction.

HOW CAN I MAINTAIN MY APPLIANCES?

- **MAINTENANCE IS IMPORTANT.** All appliances using propane must be properly maintained in order to operate safely, properly, and efficiently.
- **LEAVE IT TO THE EXPERTS.** Only a qualified service technician has the proper training to install, service, maintain, and repair your appliances. Make sure you have a qualified service technician install and service your appliances.
- **ANNUAL INSPECTION IS IMPORTANT.** Contact a qualified service technician to perform an appliance inspection.
- **BE SURE YOUR APPLIANCES CAN "BREATHE" PROPERLY.** Regularly check the vents of your appliances to be sure that flue gases can flow easily to the outdoors. Insects, birds, and small animals sometimes build nests in vent pipes. Other obstructions such as snow or ice may also occur. If you see evidence of this, call a qualified service technician. Also, clear the area around your appliance to be sure plenty of air can reach the burner for proper combustion.
- **NEVER** store combustible materials near appliances.
- **WATCH FOR YELLOW FLAMES OR SOOT BUILD-UP.** When appliances are operating properly, propane burns with a blue flame. If you see yellow flames, or notice significant amounts of soot on any equipment, the gas may not be burning completely. This can create carbon monoxide, a colorless, odorless, and poisonous gas. Contact a qualified service technician if any of the above conditions occur.

WHAT IS AN APPLIANCE CONNECTOR?

- **PROPERLY INSTALL AND MAINTAIN CONNECTORS.** The final section of the system that brings gas to your appliances is the appliance connector (see illustration on page 24). It is important that all appliance connectors are properly inspected, installed, and maintained by a qualified service technician.

HOW CAN I MAINTAIN MY APPLIANCE CONNECTORS?

- **HAVE CONNECTORS CHECKED WHEN MOVING OR REPLACING APPLIANCES.** Connectors can wear out from too much moving, bending, or corrosion. Connectors should be checked by a qualified service technician whenever the appliance is replaced or moved from its location.
- **USE ONLY APPROVED APPLIANCE CONNECTORS.** Make sure that all connectors and gas piping/tubing that bring propane to your appliances are installed by a qualified service technician and approved by the American National Standards Institute (ANSI).
- **HAVE OLDER APPLIANCE CONNECTORS INSPECTED.** Over time, some types of appliance connectors can crack or break, resulting in a serious gas leak and the possibility of fire or explosion. The Consumer Product Safety Commission (CPSC) has warned that certain types of older connectors

are extremely dangerous. If you have an appliance that is more than 20 years old, have a qualified service technician inspect the connectors to be sure they are safe and meet current safety-code requirements.
- **DO NOT MOVE AN APPLIANCE YOURSELF** to check the connector; this might damage the connector and create a leak.

WHAT SHOULD I DO IF I MOVE OR GET A NEW APPLIANCE?

- **TREAT CONNECTORS WITH CARE.** When an appliance is moved, be careful not to damage the appliance connector (the flexible tubing that brings gas to the unit). Older connectors can crack if flexed or twisted, which can lead to a gas leak.
- **IS THE APPLIANCE DESIGNED TO USE PROPANE?** Be sure that any new or used appliance being installed is designed for use with propane. Natural gas appliances **SHOULD NOT** be used with propane unless a qualified service technician has made required adjustments to the appliance.
- **HAVE THE APPLIANCE CHECKED OUT BEFORE YOU USE IT.** Be sure that the appliance is properly installed and that all controls and valves operate correctly. Contact a qualified service technician for assistance.
- **CAP OR PLUG UNATTACHED GAS LINES.** If you move a gas appliance and disconnect it from a gas line, be sure to contact your propane retailer or a qualified service technician to close, cap, or plug the open gas line. Any connectors or gas line not connected to an appliance can leak gas, or can be damaged if water accumulates inside it. The valve on any unattached gas line must be closed, and the open end must be sealed by installing a threaded cap or plug.

HOW CAN I KEEP MY HOME SAFE WHEN I AM AWAY FOR AN EXTENDED PERIOD?

KEEP YOUR HOME SAFE WHEN YOU'RE AWAY. If you're leaving your home for an extended period, consider closing all propane supply valves. This includes the main gas supply valve on the propane tank as well as gas supply valves located near individual appliances.

WHEN YOU RETURN to your home after an extended absence, contact your propane retailer or a qualified service technician to conduct a leak check before the propane is turned on and to re-light the pilot lights.

WHAT SHOULD I DO IF I HAVE A PROBLEM WITH MY PROPANE APPLIANCES OR EQUIPMENT?

- **DO NOT UNDER ANY CIRCUMSTANCES** try to modify or repair valves, regulators, connectors, controls, or other appliance and cylinder/tank parts. Doing so creates the risk of a gas leak.
- **CALL AN EXPERT.** If you are unable to operate any part of your propane system, or if you think an appliance or other device is not operating properly, call your propane retailer or a qualified service technician. They can inspect, adjust, repair, or replace any part of your propane system.
- **YOUR PROPANE SYSTEM IS DESIGNED FOR SAFETY.** Propane cylinders, tanks, and appliances incorporate special components (such as valves, connectors, controls, burners, and pilot lights) to keep them safe for use. Damaging these components can cause gas leaks.

HOW CAN I USE A SPACE HEATER SAFELY?

- **USE THE RIGHT KIND OF HEATER.** Some propane space heaters are designed only for use outdoors. Others are designed only for use indoors. Check your owner's manual or contact a qualified service technician to be sure you are using the right kind of heater.
- **DO NOT USE AN OUTDOOR HEATER INDOORS.** High levels of CO can be generated from heaters that are not designed for indoor use. High levels of CO can make you dizzy, give you headaches, or cause flu-like symptoms. In extreme cases, extended exposure to CO can result in brain damage or death.
- **READ YOUR SPACE HEATER MANUAL.** The appliance manufacturer's manual that came with your space heater tells how to set up and operate it safely. Read the entire manual and carefully follow all directions.