Preventing Gasoline Burn Injuries

A Campaign Kit for Burn Awareness Week 2001

EDUCATOR'S GUIDE

Introduction and Overview of Gasoline-Related Burn Injuries

Gasoline, when ignited in a controlled manner to power engines, serves a very useful purpose. Because it is so commonplace, however, we sometimes take its presence for granted. But the same quality of explosive ignition that makes gasoline so valuable as a fuel can cause terrible injuries when it is handled carelessly or used in a manner for which it is not intended. Gasoline and flammable liquid-related burns, however, are a preventable problem.

The Human and Property Cost of Gasoline-Related Fires

Death and injuries resulting from gasoline ignition or exposure occur in a variety of ways, and no single data source captures them all. However, it has been estimated that in the United States *each year*:

- There are a total of over 140,000 gasoline-related fires, including 120,000 vehicles (most unoccupied, fortunately).
- There are over 6,000 gasoline-related residential fires.
- About 500 people die from gasoline-related injuries**.**
- Thousands of people visit hospital emergency rooms and/or are hospitalized for gasoline-related injuries.
- Nearly $500 million in direct property damage costs are incurred due to gasoline-related fires**.**[1, 2, 3]

Source: *The U.S. Home Product Report, 1993-1997, Flammable or Combustible Liquids,* National Fire Protection Association, Fire Analysis and Research Division, Quincy, MA, August 2000.

** No Canadian statistics were available for this report.

Sources of Gasoline-Related Deaths and Burn Injuries

The ignition of gasoline from broken fuel lines and gas tanks in car crashes involving trapped occupants remains a major source of gasoline-related death and severe burn injury. The prevention of such deaths and injuries drives the work of those in a variety of disciplines, including vehicle and highway designers, public policymakers, and educators, among others.

However, a much larger number of gasoline-related injuries occur in and around the home, or result from improper transportation of gasoline in portable containers. While improved product design has helped reduce the number of such injuries, the great majority of those that continue to occur could be prevented through education; specifically, by changing the behavior of those who store and transport gasoline in containers other than their highway vehicle fuel tank. In order to promote the prevention of such incidents, an understanding of the flammability of gasoline and other petroleum products is needed. *Knowing how to prevent these injuries can protect you and your loved ones from devastating consequences!*

The first step to ensuring a safer home environment is to increase the awareness of risk and to identify potential gasoline fire hazards. The next step is to make the necessary changes in behavior and in the environment. Changing the environment involves eliminating the cause of the problem, thereby eliminating the risk.

Understanding Flash Point, Vapor Density and Flammable Range

The potential for fire, explosion and burns from gasoline or flammable liquids depends upon three factors—the flash point, vapor density and flammable range (see chart below). The severity of the burn to someone exposed to such an explosion or fire will depend on many factors, including: whether or not the person's clothing was ignited; the person's ability to stop, drop and roll to extinguish the flames; whether the incident occurred indoors or outside; and many other factors.

The **flash point** is the minimum temperature at which the liquid will give off sufficient vapor to form an ignitable mixture with air. Gasoline is very dangerous because of its low flash point of –45ºF (-43C).

The **vapor density** is the ratio of density of vapor to the density of air. Substances with a vapor density greater than 1, such as gasoline, are heavier than air and tend to accumulate in low or enclosed spaces. Vapors tend to spread faster as the temperature increases. Because gasoline vapors are heavier than air, they can flow along the ground for a considerable distance until ignited by a flame or spark.

The **flammable range** is the concentration of gas or vapor in air that will burn if ignited. It is expressed as a percentage that defines the range between a lower explosive limit (LEL) and an upper explosive limit (UEL). A mixture below the LEL is too "lean" to burn; a mixture above the UEL is too "rich" to burn. As can be seen from the chart below, gasoline is extremely dangerous because of its low flashpoint and high vapor density.

Flash Point and Vapor Density Chart

Substance	Classification*	Flash Point	Vapor Density**
Gasoline	Flammable Liquid	-45° F.	3-4
Propane	Flammable Liquid	-156° F.	1.56 @ 32° F.
Ethanol	Flammable Liquid	55° F.	1.6
Methanol	Flammable Liquid	52° F.	1.1
Turpentine	Flammable Liquid	95° F	4.8
Kerosene	Combustible Liquid	100° F.	4.5
Diesel Fuel	Combustible Liquid	125° F.	>1
Safety Solvent	Combustible Liquid	100-140° F.	4.8
Paint Thinner	Combustible Liquid	105° F.	4.9

* A *flammable* liquid is a liquid with a flash point below 100° F. A *combustible* liquid is a liquid with a flash point above 100° F.

** Air has a vapor density of 1. Substances with a vapor density >1 are heavier than air.

The Nature and Characteristics of Burns

To understand gasoline-related burn injuries, it is important first to understand burns more generally. A burn is damage to the skin and underlying tissue caused by heat, chemicals or electricity—a very simplistic definition for a very complex injury. Burns damage or destroy one or more layers of the skin. Deeper burns may involve the fat, muscle or bone.

The temperature to which the skin is exposed and the length of time that the skin is exposed to the burning agent determine the depth of a burn. Burns range in severity from minor injuries that require no medical attention to serious, life-threatening and fatal injuries.

As can be seen from the chart below, burns are classified into three categories—***superficial*** (first-degree), ***partial-thickness*** (second-degree), and ***full-thickness*** (third-degree)—depending on the depth of injury.

The Nature and Characteristics of Burns

Depth of Injury	Characteristics
Superficial (first-degree) burn • Causes: sunburn, minor scalds • Generally heals in 3-5 days with no scarring	• Minor damage to the skin • Color—pink to red • Painful • Skin is dry without blisters
Partial-thickness (second-degree) burn • Damages, but does not destroy top two layers of the skin • Generally heals in 10-21 days • Does not require skin graft	• Skin is moist, wet and weepy • Blisters are present • Color—bright pink to cherry red • Lots of edema (swelling) • Very painful
Full-thickness (third-degree) burn • Destroys all layers of the skin • May involve fat, muscle and bone • Requires skin graft for healing	• Skin may be very bright red or dry and leathery, charred, waxy white, tan or brown • Charred veins may be visible • Area is insensate—the person is unable to feel touch in areas of full thickness injuries

Except for very small areas (about the size of a quarter), full-thickness burns require a skin graft to heal. The patient is taken to the operating room, where all the dead tissue is surgically removed. Skin is taken or harvested from an unburned or healed part of that person's body and grafted or transplanted to the clean burn area. In 7-14 days, this grafted skin "takes" or adheres to the area and becomes the person's permanent skin. The donor site (where the skin was harvested from) is treated like a partial-thickness burn and heals within 10-14 days.

Emergency Care for Burns

The first step in providing emergency care for burns is to ***stop the burning process.*** Once this has been accomplished, the following steps should be taken:

- Remove all diapers and clothing from around the burn area—these will retain heat, increasing the damage to the skin. If material is adherent (stuck) to the skin, cool the area with cool water and seek medical attention. Jewelry and metal such as belt buckles and zippers also need to be removed.
- Run cool—not cold—water over the burn area for a few minutes.
- **Do not** apply ice directly to the burn. Ice can make the burn worse.

- **Do not** apply creams, ointments or salves. These products retain heat in the damaged tissue.
- **Do not** break any blisters until seen by a physician. Cover with a clean, dry cloth.
- First and second degree burns smaller than the person's palm can usually be treated at home. Keep the area clean to prevent infection by gently washing with mild antimicrobial soap several times a day and rinsing thoroughly. Cover open areas with a clean, loose dressing. Consult with your family physician or local burn center if the burn does not heal in 2-3 days or if signs of infection appear. Burns larger than the person's palm should be evaluated by a physician.

Electrical Burns may be caused by household current, outside power lines, certain batteries or lightning. Such burns may cause additional damage below the skin surface. In providing emergency care for persons with electrical burns, keep the following points in mind:

- Protect yourself! Do not touch the victim until you are sure the power has been disconnected, the plug disconnected from the source, or the patient is free from the electricity.
- Once the victim is free from the source, treat the burns as described above.
- Electricity can cause the heart and breathing to stop. CPR may be necessary.

Chemical Burns can be caused by contact with ***gasoline***, many household cleansers, lawn care products, fresh cement or other chemicals. In providing emergency care for persons who have suffered chemical burns, keep the following points in mind:

- Gently brush any dry chemicals off the skin.
- Flush the affected area with running water for at least 20 minutes or until an emergency worker tells you to stop. If the affected area continues to burn, continue to flush until the pain stops.
- If eyes are involved, continue to flush until help arrives.
- Remove any contaminated clothing.

When to Seek Medical Attention

The following points should be kept in mind in determining whether to seek medical attention for a burn:

- All burns on the face, hands, feet, major joints or genital area should be considered serious and need to be evaluated by a physician.
- **Burns bigger than the person's palm should be evaluated by a physician.**

- All chemical and electric burns should be seen by a physician, since the damage may not be immediately obvious.
- Burns occurring in an enclosed space, such as a house or car, may be accompanied by smoke inhalation and therefore should be evaluated by a physician.
- Burns that are white, gray, or leathery in areas that are painless should be considered serious.
- For serious burns, call 911 or a local emergency number.

Overexposure to Gasoline

In addition to gasoline-related burns, over-exposure to gasoline can cause numerous medical problems. The initial steps in providing first aid for exposure to gasoline are to:

- Always remove the victim from the flame or source(s) of ignition immediately.
- Dial 911 or a local emergency number to activate Emergency Medical Services.

The table below illustrates some of the medical problems associated with overexposure to gasoline:

Medical Problems Caused by Gasoline Overexposure

Body as a whole • Fever • Weakness • Convulsions • Numbness in arms and legs • Burning sensations	**Respiratory** • Cough • Slow and shallow breathing **Gastrointestinal** • Nausea and or vomiting
Skin (prolonged contact) • Rash • Burns	**Heart and blood vessels** • Rapid heartbeat • Vasoconstriction
Nervous system • Unconsciousness • Dizziness	**Eyes** • Burning and irritation

Frequently Asked Questions (FAQs)

1. What if someone becomes ill from breathing gasoline?
Gasoline is flammable. Take proper precautions to ensure your own safety before attempting rescue. Remove the victim from any source of ignition. Remove the source of contamination or move the victim to fresh air. Perform CPR, as necessary, and immediately transport the victim to an emergency facility.

2. What if gasoline gets on someone's skin or clothing?
Avoid direct contact. Wear gloves or chemical protective clothing if necessary. Under running water, remove contaminated clothing and shoes. Quickly and gently blot or brush away excess chemical residue. Wash gently and thoroughly with water and non-abrasive soap for 5 minutes or until the chemical is removed. If irritation persists, repeat flushing. Obtain medical advice immediately. Clothing and shoes contaminated with gasoline should be stored out of doors, away from sources of ignition, until thoroughly cleaned.

3. What if someone gets gasoline in their eyes?
While holding the contaminated eye(s) open, immediately flush the eye(s) with lukewarm, gently flowing water for 20-30 minutes or until the chemical is removed. Then obtain medical advice.

4. What if someone swallows gasoline?
Never give anything by mouth if the victim is rapidly losing consciousness or is unconscious or convulsing. Have the victim rinse his or her mouth thoroughly with water. DO NOT INDUCE VOMITING. Have the victim drink 8 -10 oz. of water. If vomiting occurs naturally, have the victim lean forward to reduce risk of aspiration. Repeat administration of water. Perform CPR, as necessary, and immediately transport the victim to an emergency care facility.

Increasing Awareness of Gasoline Hazards

Flammables are gases and/or liquids that can burn, release vapors, or explode at close to room temperature (under 100^{o} F). Flammable emergencies can have a "domino effect" very quickly. A small spark that causes gasoline to ignite may lead to a large fire, which can then lead to a large explosion. Injury to people and damage to property can be serious.

Flammable and combustible products such as gasoline, diesel fuel, kerosene, propane, and natural gas are highly volatile. Yet, these products are readily available and routinely used in most households. A nearby open flame such as the pilot light of a water heater or furnace can easily ignite vapors from these products. The pilot lights on natural gas or propane-fueled hot water

heaters are common ignition sources for gasoline vapors. Because of this, some states have building codes requiring gas hot water heaters and gas furnaces to be raised 18 inches above ground level when installed in a garage.

High Risk Groups for Gasoline-Related Burns

Although anyone can be injured in a gasoline or flammable liquid-related incident, certain people are at increased risk. Most gasoline injuries are job-related (e.g., farming, mechanics, yard maintenance, heavy duty and light power equipment operations). Sports and recreational activities are another source for such injuries. Incidents associated with grilling, water sports, and camping have been known to cause burn injuries. Such injuries tend to increase during the spring and summer months.

In one study, males accounted for 86% of gasoline-related burn injuries, outnumbering females 6 to 1. The most frequently reported gasoline-related burn injuries are due to working on motor vehicles (e.g., priming carburetors), fueling a fire, and motor vehicle crashes.[2]

Uses and Misuses of Gasoline

- Gasoline should only be used for its intended purpose—to fuel an engine.
- Only use gasoline products outdoors, in well-ventilated areas.
- Charcoal grills should only be started with fuels labeled as charcoal starters—never use gasoline!
- Never siphon gasoline by mouth! Even a few drops inhaled into the lungs may cause death.
- Never prime a carburetor with gasoline.

Portable Gasoline Containers and Standards

Did you know that there have been reports of fires resulting from filling metal portable gasoline containers (gas cans) in the back of pick-up trucks while the containers were resting on plastic bed liners or in vehicles with carpeted or rubber matted surfaces? These fires resulted from the build up of static electricity. The insulating effect of bed liners, carpeting or rubber mats prevents the static charge generated by gasoline flowing into containers from grounding. The discharge of the buildup of gasoline to the grounded gasoline dispenser nozzle may cause a spark and ignite the gasoline. Both ungrounded metal (most hazardous) and plastic gas containers have been involved in these incidents.

Tips Regarding Use of Portable Gas Containers

- Use only containers that have been listed, labeled or approved for gasoline.
- Do not dispense gasoline into a portable gasoline container while it is located inside a vehicle, trunk or pick-up truck bed. Make sure that the container is stable and positioned on the concrete, asphalt or ground prior to dispensing gasoline.
- When placing the gasoline container on the ground surface, make sure it is positioned away from other vehicles, people and moving traffic.
- Use caution when dispensing gasoline from the nozzle. Make sure the nozzle remains in the gasoline container until the dispensing is complete.
- Avoid using nozzle latch, or hold-open devices when filling a gasoline container.
- Do not smoke when dispensing gasoline into containers.
- Avoid use of cell phones when dispensing gasoline.

Container Standards

The Uniform Fire Code only approves one and two gallon metal or plastic containers for the indoor storage of Class I-A flammable liquid.

- The container must have a tight fitting cap for both the spout and vent. The vent prevents the build up of pressure and vapors, thus decreasing the potential for spontaneous combustion.
- The container must be predominantly red in color and properly labeled, “GASOLINE” to be approved. It must also bear the warning label about the dangers of gasoline.

Several organizations have developed standards for portable gasoline containers, including the American Society for Testing and Materials (ASTM), Underwriters Laboratories (UL) and the Canadian Standards Association (CSA). The following is a listing of portable container standards named by each organization:

- ASTM F 852 – Standard Specification for Portable Gasoline Containers for Consumer Usage
- ASTM D 3435 – Standard Specification for Portable Plastic Containers (Jerry Cans) for Petroleum Products (discontinued)
- UL 30 – Metal portable gasoline safety containers
- UL 1313 – Plastic portable gasoline safety containers
- CSA B 376 – Portable Containers for Gasoline and Petroleum Fuels

Tips to Consider when Purchasing a Portable Container

1. The best-approved safety container has a flame arrestor (designed to cut off the flow of fuel in the event of a fire) and a pressure-release valve (designed to prevent pressure build-up).
2. The container should be clearly labeled "Gasoline."
3. Metal containers, when grounded, provide the greatest protection against fires that may be caused by static electricity.
4. Examine the container for possible leaks along its seam. Do not use the container if it is damaged.

Filling Procedures for Portable Containers

Because portable containers are much smaller than vehicle fuel tanks, they fill a lot faster. To prevent over-filling or a spill, the consumer needs to control fuel flow while filling a portable container.

First of all, it is important to know that **a portable gasoline container should only be filled to 95% of capacity**. The remaining air space allows room for the gasoline vapors to expand if the gasoline warms up later. Otherwise, expansion could force liquid gasoline out of the container or could distort the container. It may also result in a buildup of pressure, which upon release could cause an explosion. This applies to both approved and unapproved containers.

In many areas, gasoline service station nozzles are equipped with an accordion-like sleeve to reduce emission of gasoline vapors during fueling. The sleeve helps return the vapor in the vehicle's tank to the service station's tank. The sleeve must be compressed to activate the nozzle. When fueling a vehicle, this happens naturally when the nozzle is inserted into the filler spout.

The same procedure is not practical with a portable container. Inserting the nozzle into the inlet far enough to compress the sleeve will activate the nozzle's shut-off mechanism when the container is only partially full. It is recommended that a customer compress the sleeve with one hand while controlling the nozzle valve with the other. This procedure allows the customer to see that the nozzle is in contact with the container. It also allows the customer to monitor the rising fuel level and stop at the appropriate time.

It is also recommended that the filling location be a safe distance from the consumer's vehicle and other vehicles, because engines that have just been turned off have hot surfaces (e.g., the exhaust manifold and the catalytic converter) that could ignite gasoline vapor. Placing the container about five feet from an ignition source should be sufficient.

Preventing Static Electricity from Igniting Gasoline Fires

Static charges may be generated by the flow of gasoline into a container. The discharge of this buildup to the grounded gasoline dispenser nozzle may cause a spark and ignite the gasoline. Fires initiated by sparks can be prevented if static electricity is not allowed to build up, particularly on conductors. One defense is to dissipate the electrical charge by creating paths that allow it to flow to ground.

Placing a container on the ground makes it easier for the electrical charge to escape. Cement or dirt are better conductors of electricity than asphalt and, therefore make a better grounding surface. While vehicles that are driven to a service station may not appear to be grounded, they are. Tires are good enough conductors to allow electrical charge to escape to ground.

Keeping the dispenser nozzle in contact with the container at the inlet or with the fuel tank fill tube creates another path by which electrical charge can escape. This is because the dispenser is grounded and the nozzle is bonded to the dispenser hose.

When a vehicle or other equipment can't be placed on the ground, a second defense is to fuel more slowly, because the slower gasoline flows, the less static electricity is generated. This is why gas companies suggest using a portable container to fuel gasoline-powered equipment being transported on a truck or trailer.

Small Engines and Gasoline-Powered Equipment

Small engines and gasoline-powered equipment, such as personal water craft, snowmobiles, lawn mowers, weed eaters, and chain saws, require special filling methods. As mentioned above, it is suggested that a portable container be used to fuel these types of engines. Because gasoline flows more slowly from a portable container than from an automatic fuel pump dispenser, less static electricity is generated.

Consumers who choose to fill such equipment on a truck or trailer directly from a dispenser should make sure they keep the dispenser nozzle in contact with the fuel tank fill tube. Failure to do so can result in the build up of a static electrical charge, which could ignite the gasoline.

Remember to fill tanks of gasoline-powered equipment, such as power mowers and trimmers, before starting to use them, to reduce the need for refueling in the middle of a task. During refueling, a warm or running engine could spark and cause an ignition of the gasoline vapors. The hazard of fueling a running engine is addressed in most gasoline-powered tools by means of a "dead man's switch," which shuts off the engine automatically when one lets go of the handle. However, it is also important to let the engine cool so that gasoline vapors dissipate.

Transporting Gasoline

The following points should be kept in mind before, during, and after the transport of gasoline:

- Gasoline should be transported only a short distance. Do not include transporting gasoline along with a list of other errands you need to accomplish.
- When transporting gasoline, make sure it is stored in an approved container, with the lid tightly closed.
- If you are transporting gasoline in a car, keep the container in the trunk and keep the trunk lid ajar for ventilation.
- Secure the gasoline container with rope or cord to prevent sliding.
- Remove the container and store it properly—never store a gasoline container in a stationary vehicle.
- After filling, transporting or using gasoline, wipe the outside of the portable gasoline container to remove any liquid or residue.
- Do not leave a container of gasoline in the direct sunlight, or in the trunk of a car that is in the sun. As the temperature of gasoline rises, it results in a build up of pressure in the container, which could lead to an explosion.
- Never smoke around gasoline, either while filling or transporting the container.

Gasoline Storage

The following points should be kept in mind when storing gasoline:

- **First, never store gasoline in the house!** Always store the container away from a house and from any other habitable structure.
- Always store the container in a cool, well-ventilated area. Keep it away from any source of heat or sparks, such as a water heater, electric motor, or car engine.
- Never use gasoline or other flammable liquids around a flame source.
- When not in use, keep gasoline containers locked up at all times.
- Store gasoline in approved, properly labeled safety containers.
- Store only the minimum amount of gasoline needed (usually no more than one gallon).

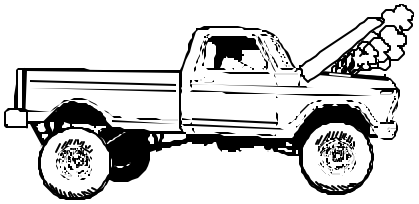
- Have a Class B type fire extinguisher located near gasoline storage areas. (Type B fire extinguishers, which are specially designed to extinguish gasoline fires, may be purchased at local hardware stores. Be sure to read and follow the manufacturer's instructions.)
- Always keep gasoline out of the reach of children.
- Use gasoline and flammable liquids outdoors, in well-ventilated area, for their intended purpose only.
- Never use glass or plastic bottles for gasoline storage. These can be easily mistaken for other less harmful liquids, which could result in them being ingested (swallowed) accidentally.

Carburetor Priming and Burn Injuries

Injuries associated with gasoline are a major cause of thermal burns in the U.S. As previously mentioned, gasoline-related burns account for thousands of emergency room visits per year. These incidents are often associated with careless use or misuse of gasoline. Most such incidents occur in the summer months, due to increased use of gasoline for farming, lawn maintenance and recreational purposes (e.g., boating) at that time of year. A lack of understanding of the explosive nature of gasoline by the general public seems to contribute to improper storage and to misuse of gasoline as a solvent, engine primer, or fire starter. Gasoline burns decrease markedly in winter months—except burns associated with carburetor priming to start cars.

Carburetor Burns—A Preventable Injury that Occurs in Daily Practice

A relatively common cause of burn injuries involves pouring gas into a carburetor in an attempt to start a vehicle. When a vehicle runs out of fuel, an airlock can develop in the fuel line between a newly filled gas tank and the carburetor. To provide adequate fuel/air mixture, gasoline may be placed directly into the carburetor to prime the engine. This practice is both dangerous and unnecessary and can result in an explosion or fire.



Explosions and fires may occur by 3 mechanisms:

- Contact of the gasoline or its vapors with hot metal (i.e., the car's engine)
- Gasoline ignition caused by an electrical spark from the electrical system of the automobile
- Ignition due to excessive gasoline in the intake

Backfire or explosions may cause burns. The occurrence of these injuries is often underestimated since many are small flash burns that do not involve hospital admissions. Typically, the burns occur to the face, neck and arms. Fortunately, carburetor burns are declining in frequency due to the increased use of fuel injection engines in automobiles. Nevertheless, prevention education focusing on carburetor burns should continue to be aimed at driver education and auto repair classes.

Grilling Safety Tips

Every year, thousands of burn injuries result from the careless use of outdoor grills. These injuries occur primarily because of the use of unapproved lighter/starter fluids or gas and the misuse of approved fluids. These injuries are preventable! Here are a few safety tips to remember when around grills.

Charcoal Grills

- **NEVER** use gasoline as a starter fluid or accelerant for charcoal grills.
- Always use an approved lighter/starter fluid for charcoal grills.
- After soaking your coals with lighter/starter fluid, wait for a minute before lighting the coals. This allows the heavy concentration of explosive vapors to disperse.
- When using lighter/starter fluid, place the container well away from the grill before attempting to light the coals.
- Be careful not to spill any fluid on your clothing or in the area surrounding the grill.
- Wear an insulated, fire retardant barbecue mitt when lighting presoaked coals.
- Never add lighter/starter fluid to hot or even warm coals. An explosion can result.

Propane and Natural Gas Grills

- When using a gas grill, check all connections leading from the fuel source to the inlet connection of the grill for leaks. Never use a match, candle or flame source to check for a gas leak. A leak can be detected by spraying soapy water at the connections. If bubbles surface, there is a leak. **SHUT TANK VALVE OFF** and tighten connections. If the connections continue to leak, have a certified dealer check the grill before using it again.
- Open the valve only a quarter to one-half turn before lighting.
- Always shut off the valve to a fuel source when it is not in use.
- Never start a gas grill with the lid of the grill closed. The propane or natural gas may accumulate inside, and when ignited, could blow the lid off, causing injury.
- Periodically, clean the Venturi tubes that displace the gas under the grill. When tubes become blocked by insects, gas is forced out somewhere else within the system. Use the manufacturer's instructions for cleaning.
- Have a BC type fire extinguisher located in the grilling area.
- Always store full or empty propane tanks in a well-ventilated shed away from the house or any habitable structure.
- Always store propane bottles away from potential sources of flame such as furnaces, water heaters or any appliance with a pilot light.
- Wear tight-fitting or short-sleeved clothing while cooking on a grill.
- Keep children and pets away from grilling areas at all times.

Inappropriate Uses of Gasoline

Generally

Gasoline should only be used for its intended purpose and should never be used as:

- A solvent
- A cleaning solution
- An accelerant
- An insecticide
- A weed killer
- A weapon
- A fuel in devices designed for other fuels, such as kerosene

Gasoline Sniffing

Gasoline sniffing (also known as huffing) is a popular form of chemical/solvent abuse for children and adolescents. It mainly occurs in children ages 5-15. Sniffing gradually increases throughout this age range before peaking around age 15.

During gasoline inhalation, 15-20 breaths can result in euphoria, unsteady walk, and confusion, lasting five or six hours. Effects of this intoxication are similar to those of alcohol and hallucinogenics. In addition to risking neurological and physiological damage, sniffers are at a significant risk of severe burn injury or death. This may occur from the ignition of vapors or from extensive physical contact with gasoline.

Gas sniffers often sustain severe injury as a result of altered sensorium. In many cases this occurs because gasoline is spilled on the person's clothes, the clothes come into contact with an ignition source, and the individual is unable to extinguish the flames because he or she is in a gasoline-induced stupor.