SUBCHAPTER 3.3

HAZARDS

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3.3.1 INTRODUCTION

The goal of the 2007 AQMP is to attain the federal eight-hour ozone standard and annual PM2.5 ambient air quality standards, thus, improving air quality and protecting public health. Some of the proposed control measures intended to improve overall air quality may, however, have direct or indirect hazards associated with their implementation. Hazard concerns are related to the potential for fires, explosions or the release of hazardous substances in the event of an accident or upset conditions.

The potential for hazards exist in the production, use, storage and transportation of hazardous materials. Hazardous materials may be found at industrial production and processing facilities. Some facilities produce hazardous materials as their end product, while others use such materials as an input to their production process. Examples of hazardous materials used as consumer products include gasoline, solvents, and coatings/paints. Hazardous materials are stored at facilities that produce such materials and at facilities where hazardous materials are a part of the production process. Specifically, storage refers to the bulk handling of hazardous materials before and after they are transported to the general geographical area of use. Currently, hazardous materials are transported throughout the district in great quantities via all modes of transportation including rail, highway, water, air, and pipeline.

The Initial Study for the 2007 AQMP identified the use of reformulated fuels, potential exposure to toxic air contaminants, flammability of reformulated products, add-on control devices (e.g., SCRs), and use of alternative fuels as possibly increasing the potential for hazards.

3.3.2 HAZARDOUS MATERIALS REGULATIONS

The use, storage, and transportation of hazardous materials are subject to numerous laws and regulations at all levels of government which serve to minimize the potential impacts associated with hazards at industrial or commercial facilities. The most relevant hazardous materials laws and regulations are summarized in the following subsection of this section.

3.3.2.1 Definitions

A number of properties may cause a substance to be hazardous, including toxicity, ignitability, corrosivity, and reactivity. The term “hazardous material” is defined in different ways for different regulatory programs. For the purposes of this EIR, the term “hazardous materials” refers to both hazardous materials and hazardous wastes. A hazardous material is defined as hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local regulatory agency or if it has characteristics defined as hazardous by such an agency. The California Health & Safety Code §25501(k) defines hazardous material as follows:

> "Hazardous material" means any material that because of its quantity, concentrations, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the

> environment. "Hazardous materials" include but are not limited to hazardous substances, hazardous waste, and any material which a handler or the administering agency has a reasonable basis for believing would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

Examples of the types of materials and wastes considered hazardous are hazardous chemicals (e.g., toxic, ignitable, corrosive, and reactive materials), radioactive materials, and medical (infectious) waste. The characteristics of toxicity, ignitability, corrosivity, and reactivity are defined in Title 22, CCR, §§66261.20-66261.24 and are summarized below:

> **Toxic Substances:** Toxic substances may cause short-term or long-lasting health effects, ranging from temporary effects to permanent disability, or even death. For example, such substances can cause disorientation, acute allergic reactions, asphyxiation, skin irritation, or other adverse health effects if human exposure exceeds certain levels. (The level depends on the substances involved and are chemical-specific.) Carcinogens (substances that can cause cancer) are a special class of toxic substances. Examples of toxic substances include benzene (a component of gasoline and a suspected carcinogen) and methylene chloride (a common laboratory solvent and a suspected carcinogen).
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> **Ignitable Substances:** Ignitable substances are hazardous because of their ability to burn. Gasoline, hexane, and natural gas are examples of ignitable substances.
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> **Corrosive Materials:** Corrosive materials can cause severe burns. Corrosives include strong acids and bases such as sodium hydroxide (lye) or sulfuric acid (battery acid).
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> **Reactive Materials:** Reactive materials may cause explosions or generate toxic gases. Explosives, pure sodium or potassium metals (which react violently with water), and cyanides are examples of reactive materials.

3.3.2.2 Hazardous Materials Management Planning

The Office of Emergency Services (OES) coordinates overall state agency response to major disasters in support of local government. OES is responsible for assuring the state's readiness to respond to and recover from natural, manmade, and war-caused emergencies, and for assisting local governments in their emergency preparedness, response, and recovery efforts. During major emergencies, OES may call upon all state agencies to help provide support. Due to their expertise, the California National Guard, Highway Patrol (CHP), Department of Forestry and Fire Protection, Conservation Corps, Department of Social Services, and the Caltrans are the agencies most often asked to respond and assist in emergency response activities.

California Assembly Bill 2185 requires local agencies to regulate the storage and handling of hazardous materials and requires development of a plan to mitigate the release of hazardous materials. Businesses that handle any of the specified hazardous materials must submit to government agencies (i.e., fire departments), an inventory of their hazardous materials, an emergency response plan, and an employee training program (19 CCR §2729 et seq.). The business plans must provide a description of the types of hazardous materials/waste on-site and the

location of these materials. The information in the business plan can then be used in the event of an emergency to determine the appropriate response action, the need for public notification, and the need for evacuation. The U.S. EPA's Emergency Planning and Community Right-to-Know Act (EPCRA) also known as Title III of Superfund Amendments and Reauthorization Act (SARA) imposes similar requirements.

Section 112 (r) of the Clean Air Act Amendments of 1990 [42 U.S.C. 7401 et. Seq.] and Article 2, Chapter 6.95 of the California Health and Safety Code require facilities that handle listed regulated substances to develop Risk Management Programs (RMPs) to prevent accidental releases of these substances. U.S. EPA regulations relative to risk management are set forth in 40 Code of Federal Regulations (CFR) Part 68. Similarly, in California, the California Accidental Release Prevention (CalARP) Program regulation (19 CCR Division 2, Chapter 4.5) was issued by OES. Stationary sources with more than a threshold quantity of a regulated substance shall be evaluated to determine the potential for and impacts of accidental releases from any processes subject to the above federal or state risk management requirements. Under certain conditions, the owner or operator of a stationary source may be required to develop and submit an RMP. RMPs consist of three main elements: a hazard assessment that includes off-site consequences analyses and a five-year accident history, a prevention program, and an emergency response program. RMPs for existing facilities were required to be submitted by June 21, 1999. The local fire department usually administers the CalARP program.

Facilities that store large volumes of hazardous materials are required to have a Spill Prevention Containment and Countermeasures (SPCC) Plan per the requirements of 40 CFR, Section 112. The SPCC is designed to prevent spills from on-site facilities and includes requirements for secondary containment, provides emergency response procedures, establishes training requirements, and so forth.

3.3.2.3 Hazardous Materials Transportation

The Hazardous Materials Transportation Act (HMTA) is the federal legislation that regulates transportation of hazardous materials. The primary regulatory authorities are the U.S. Department of Transportation (DOT), the Federal Highway Administration, and the Federal Railroad Administration. The HMTA requires that carriers report accidental releases of hazardous materials to the Department of Transportation at the earliest practical moment (49 CFR Subchapter C). Incidents which must be reported include deaths, injuries requiring hospitalization, and property damage exceeding $50,000. Caltrans sets similar standards for trucks in California. The regulations are enforced by the CHP.

Common carriers are licensed by the California Highway Patrol pursuant to the California Vehicle Code, Section 32000. This section requires licensing of every motor (common) carrier who transports, for a fee, in excess of 500 pounds of hazardous materials at one time, if not for hire, who carries more than 1,000 pounds of hazardous material of the type requiring placards. Common carriers conduct a large portion of their business in the delivery of hazardous materials.

Under the Resource Conservation and Recovery Act (RCRA), the U.S. EPA sets standards for transporters of hazardous waste. In addition, California regulates the transportation of hazardous

waste originating or passing through the state; state regulations are contained in CCR, Title 13. Hazardous waste must be regularly removed from generating sites by licensed hazardous waste transporters. Transported materials must be accompanied by hazardous waste manifests.

The CHP and Caltrans have primary responsibility for enforcing federal and state regulations and responding to hazardous materials transportation emergencies. The CHP enforces materials and hazardous waste labeling and packing regulations that prevent leakage and spills of material in transit and provide detailed information to cleanup crews in the event of an incident. Vehicle and equipment inspection, shipment preparation, container identification, and shipping documentation are all part of the responsibility of the CHP. The CHP conducts regular inspections of licensed transporters to assure regulatory compliance. Caltrans has emergency chemical spill identifications teams at locations throughout the state.

3.3.2.4 Hazardous Material Worker Safety Requirements

The California Occupational Safety and Health Administration (CalOSHA) and the Federal Occupational Safety and Health Administration (U.S. OSHA) are the agencies responsible for assuring worker safety in the handling and use of chemicals in the workplace. In California, CalOSHA assumes primary responsibility for developing and enforcing workplace safety regulations.

Under the authority of the Occupational Safety and Health Act of 1970, U.S. OSHA has adopted numerous regulations pertaining to worker safety (29 CFR). These regulations set standards for safe workplaces and work practices, including the reporting of accidents and occupational injuries. Some OSHA regulations contain standards relating to hazardous materials handling, including workplace conditions, employee protection requirements, first aid, and fire protection, as well as material handling and storage.

Under the U.S. OSHA (29 CFR Part 1910), facilities which use, store, manufacture, handle, process, or move hazardous materials are required to conduct employee safety training, have available and know how to use safety equipment, prepare illness prevention programs, provide hazardous substance exposure warnings, prepare emergency response plans, and prepare a fire prevention plan. In addition, 29 CFR Part 1910.119, Process Safety Management (PSM) of Highly Hazardous Chemicals, and 8 CCR §5189, specifically require prevention program elements to protect workers at facilities that have toxic, flammable, reactive or explosive materials. Prevention program elements are aimed at preventing or minimizing the consequences of catastrophic releases of chemicals and include process hazard analyses, formal training programs for employees and contractors, investigation of equipment mechanical integrity, and an emergency response plan.

CalOSHA also enforces hazard communication program regulations which contain training and information requirements, including procedures for identifying and labeling hazardous substances. The hazard communication program also requires that Material Safety Data Sheets (MSDSs) be available to employees and that employee information and training programs be document.

3.3.2.5 Hazardous Waste Handling Requirements

RCRA created a major federal hazardous waste regulatory program that is administered by the U.S. EPA. Under RCRA, the U.S. EPA regulates the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA was amended by the Hazardous and Solid Waste Act (HSWA), which affirmed and extended the concept of regulating hazardous wastes from generation through disposal. HSWA specifically prohibits the use of certain techniques for the disposal of some hazardous wastes.

Under RCRA, individual states may implement their own hazardous waste programs in lieu of RCRA as long as the state program is at least as stringent as the federal RCRA requirements. U.S. EPA approved California's program to implement federal hazardous waste regulations as of August 1, 1992.

The Hazardous Waste Control Law (HWCL) is administered by the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC). DTSC has adopted extensive regulations governing the generation, transportation, and disposal of hazardous wastes. These regulations impose cradle to grave requirements for handling hazardous wastes in a manner that protects human health and the environment. The HWCL regulations establish requirements for identifying, packaging, and labeling hazardous wastes. They prescribe management practices for hazardous wastes; establish permit requirements for hazardous waste treatment, storage, disposal, and transportation; and identify hazardous wastes that cannot be disposed of in landfills. Hazardous waste is tracked from the point of generation to the point of disposal or treatment using hazardous waste manifests. The manifests list a description of the waste, its intended destination, and regulatory information about the waste.

3.3.3 EMERGENCY RESPONSE TO HAZARDOUS MATERIALS AND WASTE INCIDENTS

Pursuant to the Emergency Services Act, the State has developed an Emergency Response Plan to coordinate emergency services provided by federal, state, and local government agencies and private persons. Response to hazardous materials incidents is one part of this plan. The Plan is administered by the OES, which coordinates the responses of other agencies including U.S. EPA, CHP, Department of Fish and Game, Regional Water Quality Control Board (RWQCB), and local fire departments (California Code §8550).

In addition, pursuant to the Hazardous Materials Release Response Plans and Inventory Law of 1985, local agencies are required to develop "area plans" for response to releases of hazardous materials and wastes. These emergency response plans depend to a large extent on the business plans submitted by persons who handle hazardous materials. An area plan must include pre-emergency planning of procedures for emergency response, notification, coordination of affected government agencies and responsible parties, training, and follow-up.

OES has established the State Standing Committee on Terrorism (SSCOT). The purpose of the SSCOT is to monitor terrorist trends and activities, determine the potential impact or related damage of validated terrorist threats, plan for the coordinated and comprehensive emergency

response to such events, and provide guidance for agencies responding to specific threats or events. It also provides advice to OES management, other state agency directors and the Governor's Office. The SSCOT is composed of representatives from key state and federal agencies, including the Federal Bureau of Investigation (OES, 1998).

In the Los Angeles area, the Terrorism Working Group was formed in 1996. With 44 members from a variety of government agencies and disciplines, this group meets monthly to develop plans, procedures and systems related to terrorism issues. Within the Terrorism Working Group, there is a Terrorism Early Warning Group which serves as a sounding board for threat information. They provide periodic intelligence updates and develop warnings based on criminal intelligence and investigations.

3.3.4 HAZARDOUS MATERIALS INCIDENTS

Hazardous materials move through southern California by a variety of modes including truck, rail, air, ship, and pipeline. According to the Office of Hazardous Materials Safety (OHMS), in the U.S. DOT, the movement of hazardous materials implies a degree of risk, depending on the materials being moved, the mode of transport, and numerous other factors (e.g., weather). According to the OHMS data, the highway mode accounts for the largest share of incidents, deaths and damages associated with hazardous materials transportation. Rail accidents accounts for the most injuries. On a weight basis, petroleum products make up the majority (about 80 percent) of the hazardous materials moved in the United States (SCAG, 2004).

The California Hazardous Materials Incident Reporting System (CHMIRS) is a post incident reporting system to collect data on incidents involving the accidental release of hazardous materials in California. Information on accidental releases of hazardous materials are reported to and maintained by Office of Emergency Services (OES). In 2005, there were a total of 2,901 incidents reported in the Los Angeles, Orange, Riverside and San Bernardino counties, or an average of about 242 incidents per month. In 2006, there were a total of 2,461 incidents reported for the same area, with an average of approximately 205 per month. The statistical information is from a widely distributed cross section of sources in California. These data may not accurately represent the actual occurrences of incidents throughout the state because of differences in population, non-uniform distribution of commercial and industrial facilities, and differences in resources between participating agencies statewide. Table 3.3-1 breaks down the CHMIRS 2005 data for the four counties that comprise the district.

TABLE 3.3-1

Reported Hazardous Materials Incidents – 2005/2006

County[(1)]	Reported Incidents (2005)	Reported Incidents (2006)	Percent of Statewide Reported Incidents (2005)	Percent of Statewide Reported Incidents (2006)	Percent of Reported Incidents within Basin Counties (2005)	Percent of Reported Incidents within Basin Counties (2006)	2005 County Popu-lation	Percent of State Popu-lation[(2)]
Los Angeles	1,678	1,379	22	19	58	56	9,935,475	28
Orange	401	345	5	4.5	14	14	2,988,072	8
Riverside	366	324	5	4.5	13	13	1,946,419	5
San Bernardino	456	413	6	6	15	17	1,963,535	5
Total	2,901	2,461	38	34	100	100	16,833,501	46

Source: (Gray, 2006)
(1) Data presented is for entire county and not limited to the portion of the county within the SCAQMD jurisdiction.
(2) Estimated 2005 California State Population of 36,132,147. Source: OES, November 2002, U.S. Census Bureau, Census Estimate 2005 *www.factfinder.census.gov*.

Approximately 38 percent of the reported incidents in the state in 2005, and 34 percent in 2006, occurred within the four counties that comprise the district, while the population of the four counties accounts for about 46 percent of the total population in the state. The largest number of incidents was reported in Los Angeles County, which is consistent with the fact that Los Angeles County has the largest population and the largest number of businesses of the four counties.

3.3.5 HAZARDS ASSOCIATED WITH AIR POLLUTION CONTROL AND ALTERNATIVE FUELS

The SCAQMD has evaluated the hazards associated with previous AQMPs, proposed SCAQMD rules, and non-SCAQMD projects where the SCAQMD is the Lead Agency pursuant to CEQA. The analyses covered a range of potential air pollution control technologies and equipment. EIRs prepared for the previous AQMPs have specifically evaluated hazard impacts from: (1) add-on control equipment; (2) alternative coating methods; and (3) alternative fuels.

Add-on pollution control technologies which have been previously analyzed for hazards include: carbon adsorption, incineration, post-combustion flue-gas treatment, SCR and selective non-catalytic reduction (SNCR), scrubbers, bag filters, and electrostatic precipitators. The use of add-on pollution control equipment may concentrate or utilize hazardous materials. A malfunction or accident when using add-on pollution control equipment could potentially expose people to hazardous materials, explosions, or fires. The SCAQMD has determined that the transport, use,

and storage of ammonia, both aqueous and anhydrous, (used in SCR systems) may have significant hazard impacts in the event of an accidental release. Further analyses have indicated that the use of aqueous ammonia (instead of anhydrous ammonia) can usually reduce the hazards associated with ammonia use in SCR systems to less than significant.

The potential hazards associated with alternative coating methods have been analyzed including powder coatings, radiation-curable coatings, high solids coatings, and waterborne coatings. The greatest hazard associated with both current and alternative coating methods is flammability.

Alternative fuels may be used to reduce emissions from both stationary source equipment and motor vehicles. The alternative fuels which have been analyzed include reformulated gasoline, methanol, compressed natural gas, LPG or propane, and electrically charged batteries. Like conventional fossil fuels, alternative fuels may create fire hazards, explosions or accidental releases during fuel transport, storage, dispensing, and use. Electric batteries also present a slight fire and explosion hazards due to the presence of reactive compounds, which may be subjected to high temperatures.

LNG

LNG is essentially no different from the natural gas used in homes and businesses everyday, except that it has been refrigerated to minus 259 degrees Fahrenheit at which point it becomes a clear, colorless, and odorless liquid. As a liquid, natural gas occupies only one six-hundredth of its gaseous volume and can be transported economically between continents in special tankers. LNG weighs slightly less than half as much as water, so it floats on fresh or sea water. However, when LNG comes in contact with any warmer surface such as water or air, it evaporates very rapidly ("boil"), returning to its original, gaseous volume. As the LNG vaporizes, a vapor cloud resembling ground fog will form under relatively calm atmospheric conditions. The vapor cloud is initially heavier than air since it is so cold, but as it absorbs more heat, it becomes lighter than air, rises, and can be carried away by the wind. An LNG vapor cloud cannot explode in the open atmosphere, but it could burn.

LNG is considered a hazardous material. The primary safety concerns are the potential consequences of an LNG spill. LNG hazards result from three of its properties:

- Cryogenic temperatures
- Dispersion characteristics
- Flammability characteristics

The extreme cold of LNG can directly cause injury or damage. Although momentary contact on the skin can be harmless, extended contact will cause severe freeze burns. On contact with certain metals, such as ship decks, LNG can cause immediate cracking. Although not poisonous, exposure to the center of a vapor cloud could cause asphyxiation due to the absence of oxygen. LNG vapor clouds can ignite within the portion of the cloud where the concentration of natural gas is between a five and a 15 percent (by volume) mixture with air. To catch fire, however, this portion of the

vapor cloud must encounter an ignition source. Otherwise, the LNG vapor cloud will simply dissipate into the atmosphere. An ignited LNG vapor cloud is very dangerous, because of its tremendous radiant heat output. Furthermore, as a vapor cloud continues to burn, the flame could burn back toward the evaporating pool of spilled liquid, ultimately burning the quickly evaporating natural gas immediately above the pool, giving the appearance of a "burning pool" or 3 "pool fire." An ignited vapor cloud or a large LNG pool fire can cause extensive damage to life and property.

Spilled LNG would disperse faster on the ocean than on land, because water spills provide very limited opportunity for containment. Furthermore, LNG vaporizes more quickly on water, because the ocean provides an enormous heat source. For these reasons, most analysts conclude that the risks associated with shipping, loading, and off-loading LNG are much greater than those associated with land-based storage facilities. Preventing spills and responding immediately to spills should they occur are major factors in the design of LNG facilities (CEC, 2003).

Beyond routine industrial hazards and safety considerations, LNG presents specific safety considerations. In the event of an accidental release of LNG, the safety zone around a facility protects neighboring communities from personal injury, property damage or fire. The one and only case of an accident that affected the public was in Cleveland, Ohio in 1944. Research stemming from the Cleveland incident has influenced safety standards used today. Indeed, during the past four decades, growth in LNG use worldwide has led to a number of technologies and practices that will be used in the U.S. and elsewhere in North America as the LNG industry expands. Generally, multiple layers of protection create four critical safety conditions, all of which are integrated with a combination of industry standards and regulatory compliance. The four requirements for safety – primary containment, secondary containment, safeguard systems and separation distance apply across the LNG value chain, from production, liquefaction and shipping, to storage and re-gasification. The term "containment" means safe storage and isolation of LNG (Foss, 2003).

LPG

More than 350,000 light-and medium-duty vehicles travel the nation's highways using liquefied petroleum gas (LPG or LP gas), while over 4 million vehicles use it worldwide. LPG is a mixture of several gases that is generally called "propane," in reference to the mixture's chief ingredient. LPG changes to the liquid state at the moderately high pressures found in an LPG vehicle's fuel tank. LPG is formed naturally, interspersed with deposits of petroleum and natural gas. Natural gas contains LPG, water vapor, and other impurities that must be removed before it can be transported in pipelines as a salable product. About 55 percent of the LPG processed in the U.S. is from natural gas purification. The other 45 percent comes from crude oil refining. Since a sizable amount of U.S. LPG is derived from petroleum, LPG does less to relieve the country's dependency on foreign oil than some other alternative fuels. However, because over 90 percent of the LPG used in the United States is produced here, LPG does help address the national security component of the nation's overall petroleum dependency problem.

Propane vehicles emit about one-third fewer reactive organic gases than gasoline-fueled vehicles. Nitrogen oxide and carbon monoxide emissions are also 20 percent and 60 percent less, respectively. Unlike gasoline-fueled vehicles, there are no evaporative emissions while LPG vehicles are running or parked, because LPG fuel systems are tightly sealed. Small amounts of

LPG may escape into the atmosphere during refueling, but these vapors are 50 percent less reactive than gasoline vapors, so they have less of a tendency to generate smog-forming ozone. LPG's extremely low sulfur content means that the fuel does not contribute significantly to acid rain.

Many propane vehicles are converted gasoline vehicles. The relatively inexpensive conversion kits include a regulator/vaporizer that changes liquid propane to a gaseous form and an air/fuel mixer that meters and mixes the fuel with filtered intake air before the mixture is drawn into the engine's combustion chambers. Also included in conversion kits is closed-loop feedback circuitry that continually monitors the oxygen content of the exhaust and adjusts the air/fuel ratio as necessary. This device communicates with the vehicle's onboard computer to keep the engine running at optimum efficiency. LPG vehicles additionally require a special fuel tank that is strong enough to withstand the LPG storage pressure of about 130 pounds per square inch. The gaseous nature of the fuel/air mixture in an LPG vehicle's combustion chambers eliminates the cold-start problems associated with liquid fuels. In contrast to gasoline engines, which produce high emission levels while running cold, LPG engine emissions remain similar whether the engine is cold or hot. Also, because LPG enters an engine's combustion chambers as a vapor, it does not strip oil from cylinder walls or dilute the oil when the engine is cold. This helps LPG powered engines to have a longer service life and reduced maintenance costs. Also helping in this regard is the fuel's high hydrogen-to-carbon ratio (C3H8), which enables propane powered vehicles to have less carbon build-up than gasoline- and diesel powered vehicles. LPG delivers roughly the same power, acceleration, and cruising speed characteristics as gasoline. It does yield a somewhat reduced driving range, however, because it contains only about 70-75 percent of the energy content of gasoline. It's high octane rating (around 105) means, though, that an LPG engine's power output and fuel efficiency can be increased beyond what would be possible with a gasoline engine without causing destructive "knocking." Such fine-tuning can help compensate for the fuel's lower energy density. Fleet owners find that propane costs are typically 5 to 30 percent less than those of gasoline. The cost of constructing an LPG fueling station is also similar to that of a comparably sized gasoline dispensing system. Fleet owners not wishing to establish fueling stations of their own may avail themselves of over 3,000 publicly accessible fueling stations nationwide.

Propane is an odorless, nonpoisonous gas that has the lowest flammability range of all alternative fuels. High concentrations of propane can displace oxygen in the air, though, causing the potential for asphyxiation. This problem is mitigated by the presence of ethyl mercaptan, which is an odorant that is added to warn of the presence of gas. While LPG itself does not irritate the skin, the liquefied gas becomes very cold upon escaping from a high-pressure tank, and may therefore cause frostbite, should it contact unprotected skin. As with gasoline, LPG can form explosive mixtures with air. Since the gas is slightly heavier than air, it may form a continuous stream that stretches a considerable distance from a leak or open container, which may lead to a flashback explosion upon contacting a source of ignition (U.S. DOE, 2003).