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## LPG and Environment

Increased economic development has led to rapid urbanization in the Asia and Pacific countries. The region now holds about 58 percent of total world population and 45 per cent of the world's urban population. Over the last two decades, the region's urban population has almost doubled to ~1333 million in 2002/03. Rapid urbanization and industrialization, and the associated increase in fossil fuel use, have intensified urban air pollution in the Asia-Pacific region and increased the region's

contribution to greenhouse gas emissions. Growing energy consumption in industry, transport and the domestic sectors have created a challenge for air quality management. Being the epicenter of this industrialization, India and China are significant contributors to this phenomenon.

### Air Pollution

Emissions from fossil fuel and biomass burning account for most energy-related air pollution in most parts of the world. Energy related emissions are released through the entire spectrum of energy activities, from upstream emissions during fossil fuel extraction and production to end-use emissions from fossil fuels burned for transport, heating, cooking etc.

A wide range of gaseous and particulate compounds that have adverse impacts and are considered air pollutants – includes particulate matter (PM), tropospheric (surface)



Urban Landscape

Contd...pg 2

## From the Editor's desk...



Maintaining good health of cylinders is an important aspect of LPG business. As a Company, we have given a thrust to this important activity and launched a campaign to monitor and improve health of our cylinders. Small initiatives like in-house cold repair, periodic repainting, spreading awareness on safe loading/unloading of cylinders through ramp etc is greatly helping in this focus area. We request our valued readers to support this cause by complying with the good practices and reporting defaulters so that they can be educated and corrected.

Direct/indirect heating of cylinders by LPG users is another dangerous habit and Niraj Vadgama has written a very interesting article on its hazards and ways to remove the root cause of such wrong practices. We all need to resolve to totally discourage this unsafe practice

Daniel's article highlights how 'Near Miss' reporting by involved persons can do a lot of good to their co-workers. Near Miss reporting and follow-up actions on prevention can drastically bring down the accident rate in our industry

Dear Readers, the circulation of Chetna has crossed the 1200 mark. Thank you very much for your support and I look forward to your continued participation and feedback

## Hazards of heating LPG cylinders

Several instances of direct/indirect heating of LPG cylinders by users/consumers are seen in Commercial and Industrial LPG segments in India. Lack of awareness on the hazards of such operations is the main cause for adoption of such unsafe practices, which can result in serious accidents. Users in the Industry resort to this potentially risky and unsafe act of heating filled LPG cylinders, due to reasons of residual LPG in cylinders, space paucity, adverse climatic conditions (winters) and low capital investment

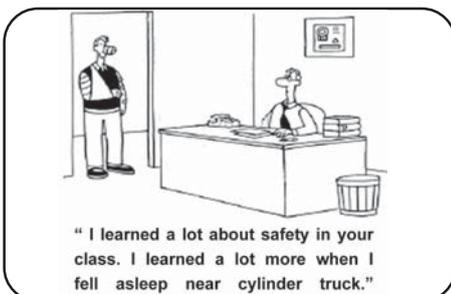
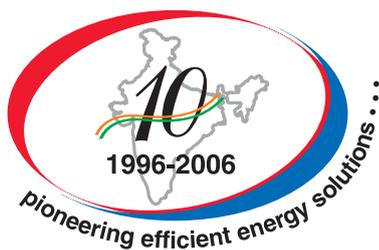
Petroleum and Explosives Safety Organization recommend adherence to IS: 6044 (Part I), and OISD-162 for multi-cylinder LPG cylinders.

These specifications strongly prohibit direct/indirect heating devices inside LPG installation, extracts of which are as under for ready reference.

**a. OISD-162, Clause 6.17:** "No Heating devices of any nature are permitted to be installed in the storage shed."

**b. IS: 6044 (Part 1) Clause 3.1.15:** "Cylinder shall be placed at a distance of 3 m from any source of heat which is likely to raise the temperature of the cylinder above the room temperature."

Contd...pg 2



## Safety Relief Valve – Testing Procedure

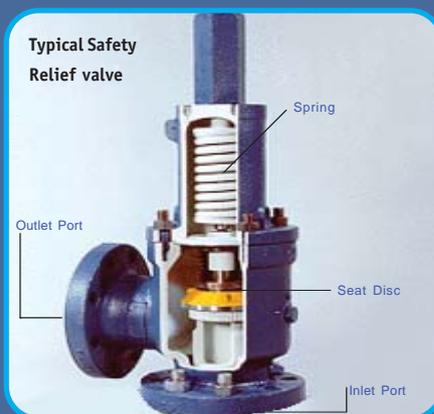
Every LPG vessel used for storage of LPG at Plants/Bulk Installations or for Bulk Transportation, is provided with two or more spring Loaded Safety Relief Valves (SRVs). These valves open under the excessive pressure conditions and are set to operate at pressures not exceeding 110% of designed pressure of the vessel and have a relieving capacity sufficient to prevent build of pressure beyond 120% of the design pressure

As per SMPV Rules, SRVs are to be tested and certified for correct operation by competent person at intervals not greater than one year. Gas or vapor service valves are normally tested using air, steam or nitrogen as the test medium. Set-to-discharge pressure testing of SRVs is undertaken to verify its lifting at the specified set pressure and its re-seating is checked to ensure no leakage after pressure is released.

The Procedure for Pneumatic Testing of SRV is as below:

- a. Close the SRV shut-off valve, seal it in the closed position and only then remove the SRV

- b. As two or more SRVs are provided on every vessel, remove and test only one SRV at a time. Reinstall the tested SRV before removing the next SRV for testing
- c. Blank the SRV inlet end with a blind flange and connect it to a nitrogen cylinder.



- d. Pressurize the SRV and note the pressure at which the first pop-off is heard. This is the opening pressure. This should match

the designed 'set to operate' pressure

- e. Gradually release the pressure from the cylinder and note the pressure at which the valve sits back on its seat as the closing pressure
- f. Blank the SRV discharge end and attach a flexible tube to this flange and drop it into a vessel filled with water. Now pressurize the inlet end of the SRV and hold for a few minutes. If bubbles are formed in the vessel then the valve is leaking and does not pass the test. Proper repairing and testing should be done at an authorized workshop

The importance of yearly testing of SRVs especially for vessels used for LPG storage cannot be over emphasized. If shortcuts are taken and physical testing is avoided, the potential for a disaster is very high.

**Somnath Bhattacharya**  
Kolkata

## Hazards of heating LPG cylinders

Contd from...pg 1

Some hazards of direct/indirect heating of LPG cylinders are as below:

- a. Increase in temperature of LPG will rapidly increase the pressure inside the cylinder leading to possibility of either bursting of pigtails or diaphragm failure of primary regulating device (First Stage Regulator). This may further result in LPG leakage and a catastrophic fire
- b. Usage of water bath arrangement for indirect heating may also lead to lime scaling and corrosion of cylinder, which in turn reduces the effective heat transfer leading to reduced vaporization and off take from cylinder
- c. Loose Electrical wire hanging from the water

bath heaters are potentially dangerous and increase the possibility of fire

d. Improper earthing of heating devices may lead to possible electrocution along the manifold owing to passage of current through the manifold

It is evident from the above, that usage of direct/indirect heating devices in manifold installations not only constitute violation of statutory regulations but also increase the possibility of fire etc.

Our endeavour in convincing customers of not adopting the above unsafe practices has been fairly successful. A bit of care when designing manifolds will go a long way in ensuring safe operation of manifolds and obviate the need for cylinder heating. At Super Gas we provide support to our customers through a well trained Technical Team which has the necessary tools and programs to very quickly design and optimize the manifold size. Let us be Safe than Sorry by taking full cognizance of the above potential hazards and avoid any undue accidents.

**Niraj Vadgama**  
Delhi



Contd from...pg 1

ozone (O<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>) and nitric oxide (NO) (together known as nitrogen oxides or NO<sub>x</sub>), sulphur dioxide (SO<sub>2</sub>), carbon monoxide (CO), harmful levels of carbon dioxide (CO<sub>2</sub>), volatile organic compounds (VOCs) and metals.

The major threat to clean air is now posed by traffic emissions. Petrol and diesel-engine motor vehicles emit a wide variety of pollutants, principally CO, NO<sub>x</sub>, VOCs and particulates, which have an increasing impact on urban air quality. High SO<sub>2</sub> and NO<sub>x</sub> emissions as well as increasing levels of Suspended Particulate Matter in many Indian cities are a cause for growing concern.

### Dealing with Air Pollution

Concerns for energy security, rising energy demand and costs, human health and the environment have resulted in increasing need to control and manage demand, improve efficiency, and to promote sustainable energy options including improved fossil fuel technologies (hydrocarbons) and renewable energy sources. Among these, using fuels with superior emission characteristics as well as increasing energy efficiency appear to be the most effective way to curb air pollution in the immediate future. Improved energy efficiency offers several win-win

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## LPG and Environment

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options for better air quality, reduced greenhouse gas emissions, improved energy security, and last but not the least financial savings.

### Domestic And Commercial Sector

Traditional fuels such as wood, charcoal etc. are usually burned with poorly designed devices for cooking in the households and in small eateries resulting in emission of various greenhouse pollutants such as carbon mono-oxide and particulate matters. A brief comparison given below indicates that LPG wins on all counts as compared to traditional fuels:

**Relative Pollutant Emissions Per Meal**

	Biomass	Wood	Kerosene	LPG
Carbon Monoxide	64	19	3.1	1.0
Hydrocarbons	115	17	4.2	1.0
Particulate Matter	63	26	1.3	1.0

Kerosene tends to be cheaper than LPG but may be associated with a higher risk of injuries, and must be burned in better-quality and well-maintained stoves to be adequately clean.

### Industry and Power Sector

In the industrial and power sectors, cleaner fuel technologies are already mature and commercially available. Although, renewable sources are increasingly becoming popular, they are still not easily available as well as application into many industrial processes is yet to be proven techno-commercially. On the other hand, non-toxic fuels like LPG have been providing clean and efficient solution to this problem.

### Transport Sector

Vehicular emissions have been a major contributor to the increasing air pollution. Ever increasing vehicle population, particularly in the developing world is a adding to this concern. However, welcome initiatives have been taken to phase out leaded gasoline in many countries including India. Further steps include improving fuel quality and developing new fuel specifications, including lowering of sulphur levels; upgrading the quality of vehicles and tightening emission controls. In addition, definite measures have been taken to convert

old vehicles to cleaner fuels such as LPG and CNG. This drive, ably supported by the Government, has proved successful in the first phase and has found good acceptance with the consumers.

### Benefits of LPG in Helping the Environment

New technologies are being developed regularly to make industrial processes, domestic cooking and transportation more efficient as well as environment friendly. Renewable sources of energy such solar, wind etc. are also being

developed. However, LPG is one of the fuels which has been proven over the years to be consistently successful in wide variety of applications and usage. Besides being available easily and portable, LPG offers a perfect solution – cost effective, dependable, convenient, clean and safe.

LPG is clean burning. When properly mixed with air to form a combustible mixture, it produces virtually no soot (PM), low CO, HC and NOx. LPG impacts greenhouse gas (GHG) less than any other fossil fuel when measured through the total fuel cycle. And in the event of any leak, LPG readily vaporizes and dissipates into the atmosphere and does not contaminate water or soil as many other liquid fuels.

Non-fossil fuels such as solar and wind are environment friendly but have reliability limitations and are costly.

The flexibility of LPG makes it possible to supplement the basic energy supply when solar or wind is not producing energy. Both, the environment and the customer benefit from this unique partnership.

### Super Gas Contribution

Super Gas has been pioneering the efforts for a clean environment by actively providing solutions for LPG applications in diverse industrial processes. Super Gas helps customers in switching over from traditional fuels and is involved in almost the entire value chain – from designing and maintenance of LPG installations to supply of gas - thereby ensuring overall safe and energy efficient operations.

## Safe working at elevated heights



Porbandar team replacing sphere stairway steps

Porbandar Terminal is located in a highly corrosive zone and hence maintenance of tanks, equipment and steel structures is a great challenge. The LPG storage spheres and structures are as high as 21 meters. Working on these elevated heights therefore requires careful planning and many safety precautions. It is important to deploy only the workmen, who are well trained to work on elevated structures/buildings

Replacement of almost 200 nos steps of the sphere staircase was successfully undertaken by the Porbandar terminal team in the past few months. The process of renewing each new step, which avoided any hot work, involved manual cutting of the old corroded step with a hack saw, grinding and drilling holes for attachment of each new step. Some of the safety measures taken were

- Ensuring the area was totally vapor free with the help of Portable Gas Detector
- Issuing work permits before commencement of work
- Utilization of personal protection equipment like safety belts/safety goggles/safety shoes/helmets etc.
- Providing additional safety rope from the nearby heavy member of structure
- Establishing effective communication between Control Room and execution team through VHF radio set (walkie-talkie)
- While using cutting/grinding machines ensure zero sparking from the edges by continuous water spraying on the local area
- Ensuring fire fighting system in Auto mode and fire extinguishers available near the work place
- Ensuring availability of all material at work to minimise effort during step replacement activity
- Inspecting work place and removal of unwanted materials
- Closing the work permit after completion



Sunil Jhingran  
Hyderabad

Vinod Bhogayata  
Porbandar

## Safety Program at Joint CCOE Office, Kolkata

Super Gas team consisting of Mr. Somnath Bhattacharya and Mr. HIRAK ROY attended an in-house training program organized by the Joint Chief Controller of Explosives, East Circle, Kolkata. It was right step in the direction of achieving the goal on safety.

Mr. G.L Deb, Joint Chief Controller of Explosives appreciated the spontaneous response of Super Gas to participate in program. Presentations made especially the audio visual presentation

on Mexico City/Turkey LPG accidents involving BLEVE were appreciated as they would have a lasting impression in the minds of the participants.

Mr. Deb indicated that the Explosives Department is planning to organize many more of such awareness programs in the near future and invited Super Gas to join hands in taking forward the Safety initiative

**Somnath Bhattacharya**  
Kolkata



Super Gas team being felicitated by Mr. Ranga Swamy, Deputy CCOE

## Bulk tanker crew training

Babra Filling Plant is an authorized Regional Transport Authority Center for training and issuing Safety Certificates to bulk tanker and cylinder truck crew. A Training Program was arranged for our Bulk Tanker Drivers on 02 April 2006. A total of 44 tanker crew attended the program in two batches. The objective of the program was to educate the crew on good practices, use of emergency kit through practical demonstrations, safe driving etc. The program became very interactive especially when a few case studies on accidents were discussed with the drivers

A small written test was also conducted. Of the 36 candidates who took the test 21 cleared with more than 70% marks.

The Region also took a small initiative in developing a crew rating system with 10 parameters for evaluating the performance of the Transport crew over the last one-year. The following drivers were adjudged winners for 2005

1. I PRIZE: Mr Tej Bahadur – Bhavik Bulk Carriers
2. IIPRIZE: Mr. Raj Bahadur – Bhavik Bulk Carriers
3. III PRIZE: Mr. Mahendra Pal – Sonia Associates

Well Done Babra Team!

**Rajashri Shanbhag**  
Ahmedabad



Tej Bahadur receiving first prize

## Tyre safety



Vehicle tyres have a 4-year validity period from their Date of Manufacture (DOM). Thereafter, the tyre expires and may burst whilst in use. How to find out whether your tyre validity has expired? Check for a stamp '4002' as shown in picture above : The first two numbers '40' indicates the week of the year in which it has been manufactured. The last two numbers '02' represent the year of manufacture. '2699' this shows that the tyre is made in the 26th week of 1999.

Check all your tyres for safety purposes. Do not use expired tyres. They are likely to burst (especially when running in hot weather) because the rubber component may have hardened and cracked.

**Vaddi Ramnath**  
Hyderabad

## Safety during LPG transportation

Many Safety initiatives were introduced when the last bulk transportation agreement was formulated. The agreement necessitates adherence to many safety measures by transporters and their crew. Some strictures like restriction on night driving, penalties for even minor Safety violations have yielded good results and there is a seemed safety awareness and reduction in road accidents.

We have also strengthened our training and more and more programs are being organized at our Plants and Terminals. Handling the Tanker Emergency kit is one such focus area and we are confident that with these initiatives, we will further improve safety awareness among the transporters & bulk crews.

**B.Mallaiah**  
Hyderabad

## Safety Training at Hyderabad



Franchisee training program at Hyderabad

A Safety Training was conducted on 19<sup>th</sup> June 2006 for Hyderabad Franchisees. The program was attended by large number franchisees and their representatives. Program mainly focused on training development of our franchisee so that they can handle customer complaints independently.

Additionally, hazards of Illegal Filling, CCOE Godown License guidelines etc were also covered. Program was very interactive & participants went away satisfied on queries they had on problems that they are facing in their day to day jobs. Program was appreciated by all it was felt same will help them to solve customer complaints better and faster.

**Chirag Vithlani**  
Hyderabad

## Mock Drill at Bulk Customer location



Mock drill at Monsanto

An 'On Site' Mock Drill was conducted on 28<sup>th</sup> March 06 at Monsanto India Limited, one of our esteemed Small Bulk customer, by our Kondapally Plant Team. The Deputy Chief Inspector of Factories West Godavari Division Mr. Chandrashekar Verma was a special invitee for witnessing the Mock Drill. The performance of Monsanto and Super Gas team was appreciated by Mr. Verma and areas of improvement were shared with participants.

**Savana Praveen**  
Hyderabad

## Mock Drill at Burdwan Plant



Mock drill at Burdwan filling plant

Mock drills at filling plants is a regular activity and this is done to keep everybody alert and ready to handle any kind of emergency which may arise in and around a filling plant. Mock drills are conducted once every month and one such drill was conducted at Burdwan Filling plant on 2nd June 2006.

The mock situation was an emergency due to leakage from the rotogauge of one storage Bullet (20 MT) while a tanker was being decanted in the adjacent Bullet (28 MT). Response time was recorded to be 20 seconds and leak was attended with emergency kit. Shortcomings observed during the drill were noted down and discussed among the participants in order to avoid recurrence of similar mistakes in future. The overall performance was found to be satisfactory and the team was found to be ready to handle any emergencies properly

**Avijit Santikari**  
Kolkata

## Safety Committee Meet at Chennai

A Location Safety Committee was constituted to function from Chennai Office for the first time, to look after the safety needs and ensure measures for current and future business activities. Many key issues including Safety Boards at customer premises, safety during cylinder transportation etc. were discussed. Individuals were assigned the safety activities for implementation within a fixed time frame. These activities would be reviewed when the committee meets next in September 2006

It is a small beginning but we are on the right track to safety

**Kalyan Guha**  
Chennai

## 'Near Miss' reporting

During course of conducting an accident investigation, nothing is more frustrating to learn that similar incidents went unreported because accidents were narrowly missed and nobody got hurt. You hear: "Machine guard was loose for two weeks;" or, "I slipped on that same spot yesterday;" or, "equipment has been malfunctioning for past three days."

If only people working in and around the area who understand the dangers of a situation had conveyed the 'Near Miss', action would have been taken and the accident could have been prevented! Employees and involved persons could do themselves and their co-workers a world of good by reporting 'Near Misses'

### Why Near Misses Go Unreported

There are several reasons:

- It is not recognized that a near miss needs to be reported. The thinking goes "I didn't get hurt; so nothing actually happened"
- The employees involved may fear disciplinary action for causing the incident
- Reporting takes time that we feel we do not have. "I have to write a report for *this*?"
- Employees don't know *how* to report near misses. "Who do I tell?"

### Overcoming Reluctance

Everyone – Managers, Engineers, and especially the people working on the shop floor, need to be educated and understand the implications, understand that the situation *might not be addressed*, unless they report it, so that a red light flashes in their minds, every time they witness a near miss

Plant Engineers play a key role in education and awareness building efforts. They need to instill into everyone the urgency of reporting near misses.

### 5 Ways to Get Employees to Report Near Misses

Here are 5 steps to obtain this valuable information:

- Require that all *incidents* be reported immediately
- Expand the definition of *incident* to include not only injuries and illnesses but also near misses and hazards
- Educate employees about *what* constitutes a near miss and *why* they're to be reported. Employees need to know that reporting a near miss is a Good Practice!
- Make it easy for employees to report a 'near miss' through simple format
- When an employee reports a 'near miss', acknowledge the effort and use their input to remedy the situation

**CJ Daniel**  
Hyderabad

## Customer Speak



We are very much delighted in getting support from Super Gas. You have provided valuable services timely for arranging the set up of 10 MT bullet yard with all facilities. Even we are new to the project, Super

Gas team guided us properly in getting the statutory licenses on time. Without your support, we might have not completed the project in time. The quality of work is also very good. Once again we appreciate your team effort.

**P. Brahmananda Reddy**  
Bharathi Agro Enterprises



SG team.....thanx a million for your very prompt compliance, service and great support during the drying season

**Vasudev Rao**  
Monsanto India Pvt. Ltd.



We at Pepsi Co India Holding Pvt. Ltd (Frittolay Division) have been using LPG supplied by M/s SHV Energy Pvt. Ltd, for the last two years M/s SHV have rendered support by always ensuring timely delivery of quality LPG.

**Jayakrishnan S. Nair**  
Pepsico India Holding Pvt. Ltd.



The Sevice Provided by Super Gas has been Commendable in terms of delivery and customer satisfaction Inspite of Suggestions to switch over to Public Sector Gas,

**Sailesh**  
Balaji Creations

We are using Super Gas since last year for cooking purpose. Our experience of using Super Gas – LPG as a fuel has not only benefited us with fuel economy but other intangible advantages like overall efficiency, cleaner environment, low maintainance etc.The service has also been excellent.

**Rajesh Singh**  
Pizza Hut

We are using Super Gas and have converted from Light Diesel Oil to Super Gas since March'05 for the hot air generator and boiler application etc. We thank Super Gas for the excellent service and technical support.

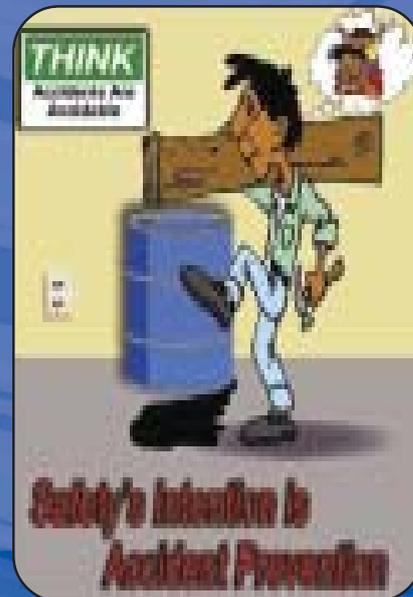
**Kamal Yadav**  
Arora Fibres Ltd.

we stuck to Super Gas and it has come up to our expectations. We thank Super Gas for its sincere efforts in this field.

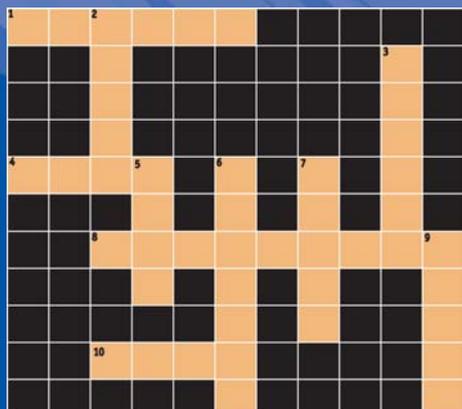


We are using Super Gas since 1997 for manufacturing glass. We thank Super Gas for rendering uninterrupted supplies, assistance on technical and safety issues and excellent services from time to time for operation of LPG system. We hope continual support and service from Super Gas for long term mutual beneficial relationship.

**R.M. Gore**  
Astral Glass



## Fire Safety Crossword



### ACROSS:

1. It makes your room warm. Kids should stay away
4. This gives light. Do not drape anything over it
8. Smoke alarm system needs these to be changed at least once a year
10. This is hot, dark, loud, and scary

### DOWN:

2. This sounds a warning
3. This is your job if uncontrolled fire breaks out
5. You and your family need to practice your fire escape
6. Kids must never play with these
7. These plug into the wall and kids should never touch them
9. A burning house fills with this and it makes it hard to breathe or see

### Answers:

Down: 2. Alarm 3. Escape 5. Plan 6. Matches 7. Cords 9. Smoke  
Across: 1. Heater 4. Lamp 8. Batteries 10. Fire

This in-house newsletter is issued by :

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