

## **LEGAL DISCLAIMER**

**The views expressed in this paper are the views of the author(s) and do not necessarily reflect the views or policies of the Asian Development Bank (ADB), or its Board of Directors or the governments they represent.**

**ADB does not guarantee the source, originality, accuracy, completeness or reliability of any statement, information, data, finding, interpretation, advice, opinion, or view presented, nor does it make any representation concerning the same.**

# Safety and gaseous fuels

**Jaap Visser BP Gas, quality and standardisation**

**Manila, 23 October 2002**

**Contact Details:**

**Tel: +31-55-3557893**

**Fax: +31-55-3557893**

**Mobile: +31-6-53467175**

**Email: visserjx@bp.com**

## Safety attitude

- **Our commitment:**
  - No accidents
  - No harm to people
  - No harm to the environmentSupported by structured programs and monitored by stringent reporting systems
- **Message to stream managers:**
  - If you can not do it safely, don't do it

Subjects:

1/8

- Transport
- Gas station
- Filling the vehicle
- On board equipment
- Fuel specification

Transport

2/8

- Road tanker fully equipped:
  - Safety relief valves
  - Self closing bottom valves
  - Emergency shutdown button
  - Designed and maintained acc. to int. regulations (ADR)
- Driver:
  - Trained for (defensive) driving
  - Trained for dangerous goods transport
  - Safety attitude
- Natural Gas by public pipeline system

## LP Gas station

3/8

- Designed to national standards.
- CEN standards in progress
- Underground storage?
- Overfill prevention
- Automatic, quick closing valves
- Emergency shut-down
- Hose break coupling
- Operating/Emergency instructions
- Employee training

## Natural Gas Station

4/8

- Refuelling inside buildings allowed
- Roof ventilation refuelling site
- Hose break coupling
- Water prevention measures
- Prevention of liquid formation of heavier HC's
- Adequate ventilation of compressor house and high pressure storage area
- Self closing valves
- Emergency shut down buttons
- Instructions/trainings

## Filling the vehicle

5/8

- Prevent use of adapters
  - Adapters increase risk during filling
- One universal filling unit
  - Preferably mandated world wide
- Easy to use
  - Customer friendly
- Low blow off volume
  - Environmentally friendly
- CEN standard for LPG filling unit (Draft)
- ISO standard for NG filling unit (Final)

## On board equipment

6/8

- Technical requirements for OEM vehicles
  - LPG: UN/ECE Regulation 67
  - CNG: UN/ECE Regulation 110
    - Overfill/overpressure prevention
    - Pressure relief valve
    - Fusible plug
    - Test requirements for all components
    - Installation requirements
    - Emission requirements

## Fuel specification

7/8

- Water
- Particles
- Smell/odorant
- H<sub>2</sub>S
- Other trace components
  - Residue (in LPG)
  - Propane and heavier (in CNG)
- Constant/adequate composition
- Future sulphur levels

## Summary

8/8

- Most important question:  
Can gaseous fuels be handled safely?
- Answer:  
Yes, but:
  - Safety requirements need to be respected
  - At all levels in the chain
    - Transport/delivery
    - Retail sites
    - Automotive equipment
    - Installation in the vehicle

Thank you for your attention!

**Questions?**