

## CASE REPORT

## Impact of Gas leakages on Environment

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### ABSTRACT

Gas leakage is commonly observed problem which causes hazardous effects on environment and human health. This Project highlights the "Impact of gas leakages on Environment". There are many incidents of leakage across India. After the improvement in transportation and increased haste in 21<sup>st</sup> century, considerable increase in the number such incidents have taken place in Pune-Mumbai Highway. The present study focuses on details and remedies to this problem.

**Keywords:** Save Environment.

### INTRODUCTION

The ultimate goal of this project is an integrated evolution covering risk -related, environmental and economic aspects associated with different energy systems. The results of this work are intended to serve as a scientific support to the decision making support concerning energy supply option for the country.

The focus of the other side of this debate, however, is the potential environmental impacts and subsequent public health implications- of shale gas development. Shale gas development is currently exempted from the Safe Drinking Water Act, Clean Air Act, and Clean Water Act regulations. Serious environmental and health concerns have nonetheless emerged regarding drilling activity (COGCC & Commission, 2009). The opposition to shale gas development cites recent studies reporting methane leakage (Howarth *et al.*, 2011), Lyverse & Unthank, 1988), and increased truck traffic (Considine *et al.*, 2011; ALL Consulting, 2010). Inferring from the environmental concerns, a few recent studies have assessed the potential health effects of unconventional methods using case studies, health impact assessments and toxicology to show that there are likely to be short and long term

negative health effects (Bamberger & Oswald, 2012; McKenzie *et al.*, 2012; Colborn *et al.*, 2011).

There has been much discussion in the media and in the scientific community about the pros and cons of developing this resource. The debate has typically been couched in terms of economic considerations vs. the protection of the environment and public health, with proponents and opponents at times articulating both types of

concerns. For example, shale gas detractors have sometimes used economic arguments to defend their position, as there are worries about declines in property value (Marcellus Shale, 2013 ), boom and bust economic cycles characteristic of energy extraction towns (Jacquet, 2009) and threats to the long-term, economic viability of other arenas, such as agriculture and tourism (Adams and Kelsey, 2012).

**History:** Accident involving LPG tankers in India during 2012.

Event	Date	Place	Description
A gas tanker exploded due to leakage.	27-07-2012	Surajpur, Dadri area	Two people were killed and 20 injured.
A tanker 5 carrying liquefied petroleum gas (LPG) overturned after hitting a divider and caught fire.	29-08-2012	National highway in the Chala area.	Two people were killed and injured. Fire engulfed five houses and some shops nearby.
A tanker carrying 30 tonne of inflammable isobutene was hit by a trunk.	07-09-2012	old Mumbai- Pune highway .	Massive leakage from the tanker.
L.P.G. gas container toppled roadside .	03-12-2012	old Mumbai- Pune highway – Uran to Shikrapur.	Leakage from the L.P.G. Container.
LPG tanker turns turtle hit a sugarcane tractor.	09-03-2014	old Pune-Mumbai highway somatane Phata toll booth.	A minor gas leakage was reported from the LPG tanker at midnight.



A tanker carrying 30 tons of inflammable isobutene was hit by a trunk 07-09-2012.



**A tanker carrying 30 tons of inflammable isobutene was hit by a truck 07-09-2012**



**L.P.G. gas container toppled roadside 03-12-2012.**



**The LPG tanker which overturned on the Mumbai-Pune highway on 09-03-2014**

**Case studies:-**

Case studies were conducted to highlight above said problem.

- 1) A tanker carrying 30 tons of inflammable iso-butane was hit by a truck on 06-09-2012 on old Mumbai – Pune expressway near Khandala. We visited the place to know the problems faced by people in that area after gas leakage and what measures were taken to control the problems.
- 2) A tanker carrying 10 tons of inflammable butane was hit by a tempo on 02-12-2012 on Mumbai-Pune expressway near Kamshet. We visited the place to know the problems faced by people in that gas leakage and what measures were taken to control the problem.

**Effects of Gases on Environment:-**

- 1) Exposure to high concentration can cause headache, light headiness, drowsiness and passing out from lack of oxygen.
- 2) Mixed butane gas is extremely flammable and volatile .It presents a significant and volatile. It presents a significant and explosion hazard.
- 3) Contact with liquid butane can cause frostbite of the skin and eyes.
- 4) Long term health effect depends on the residual butadiene content of the mixed butane gas.
- 5) Violent release of gas at high pressure under river bed may escape in the form of jet spray into surrounding area causing fire hazard.
- 6) Aquatic flora and fauna near the Pont of may be affected.

**Safety Measures:-**

- 1) Laser based Smoke Aspiration Systems.
- 2) Smoke Control Systems
- 3) Gas & Solvent Based Detection Systems
- 4) Open Path Gas Leak Detection Systems
- 5) Gas Analyzers
- 6) SIL based Fire Protection Systems

- 7) Water Based Fire Protection Systems like Hydrant ,Sprinklers ,Water Spray, foam Systems
- 8) Chemical Based Clean Agent Fire Protection Systems Like INERGEN ,FM200,HFC227,NOVEC1230 ,& Carbon Dioxide Flooding Systems
- 9) Fire Escape System, Fire Exits with Fire Doors
- 10) Voice Evacuation Systems.
- 11) Escape Chute Systems
- 12) Compressors & Air Distribution Systems
- 13) Gas Storage & Piping Systems.

**CONCLUSION**

Fule, Ignition & oxygen help to catch fire. Their level in such incidents causes a lot of natural as well as financial loss, so to avoid it. We should follow the phrase “Prevention is better than Cure.” In order to reduce the potential risks the public need more guidance from scientific studies to show how far air emissions from gas operation are transported.

We would like to suggestion following safety measures.

- a. Installation of siren if possible on gas.
- b. Transportation should take place in suitable climate & conditions.
- c. There should be fire brigade & other control rooms at every possible toll Express way.

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