

Danger Lurking Beneath Surface

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Explosions from accumulated methane gas in confined spaces hit headlines in recent times. The most recent of such deadly accidents took place at a building in Siddique Bazar in Dhaka on March 7, leaving at least 24 dead and around a hundred injured. Earlier, similar accidents had occurred at the Tollabag Mosque of Narayanganj and a building at Moghbazar in the capital, killing several people and injuring many others. Discussion on such incidents continues only for a few days.

25 YEARS

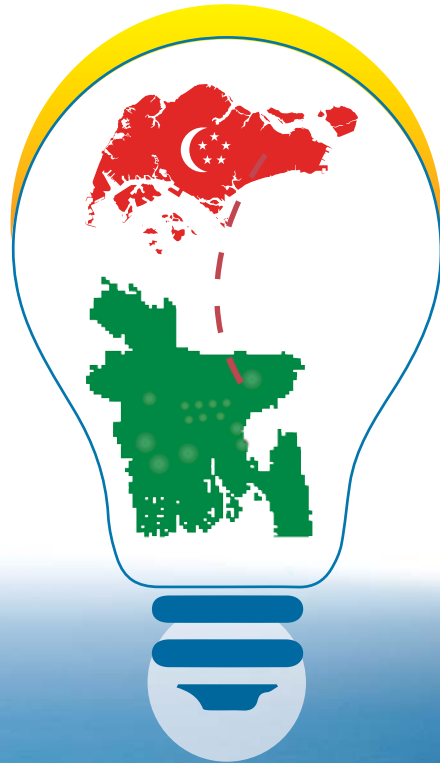
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Parties responsible for these accidents get engaged in the blame game. Even after identification of the reasons behind such accidents, the parties like gas distribution utilities, sewerage authorities and others are concerned to get involved in blaming each other. None takes any notice if such accidents do not cause any death. Whatever may be the case, whether it is from gas leakage or leakage from gas coming out from sewerage disposals, parties ignore it, disowning their respective responsibilities. It seems like everyone waits for the next such unfortunate incident and death of innocent people. No habitat in the cities, towns, or villages is free from the risks of explosions. Accidents from unauthorized use of CNG cylinders ignoring safety provisions, accidents from misuse of LPG, and explosions from gas accumulations from leaked gas distribution systems or sewerage lines have almost become a way of life now. The entire country is now at great risk as organizations responsible for ensuring risk-free supply are not shouldering the responsibilities. Not only cities and towns, but even villages also are no longer out of danger of such gas-bomb explosions.

Siddique Bazar Explosion

Residents of the building, pedestrians and bus commuters were among the victims of the explosion. Many of the injured people are now at the Sheikh Hasina Burn Unit and Dhaka Medical College Hospital. It emanated from investigations by different agencies that there existed a restaurant in the basement of the building. Later, a sanitary ware market was set up there. The gas connection to the restaurant was snapped, but gas is still supplied to the building's upstairs. On the other hand, though the connection to the restaurant was stopped in 2001, it was not permanently sealed. Initial investigations by the fire service, police and RAB indicated that the explosion is an outcome of sparks igniting the accumulated methane gas. TGTDCCL, however, claimed that there was no leakage from their gas line. They suspect that gas accumulated from the sewerage



Fire service personnel in rescue operation after Siddique Bazar explosion

line existing there might have led to the accident. But other agencies carrying out primary investigations assessed it as a methane accident from a leaked gas-supply line. A legitimate question is raised that Titas Gas is not supposed to provide a gas connection to a restaurant set up in the basement of a building. Rajuk and other organizations after visiting the spot were informed that the building was constructed ignoring provisions of the building code. There is no legitimacy to set up a market in the basement of a building. But the harsh reality is that the families of the victims have been thrown into great misery. Three including the owner of the building were arrested and sent to jail for confinement.

Explosion in a Building Near Science Laboratory

Another major explosion took place on the 3rd floor of Shirin Bhavan near the Science Laboratory on 5 March 2023 – only 54 hours before the incident at Siddique Bazar. Three got killed and fifteen others were injured. Preliminary investigation evidenced that natural gas leaked from Titas pipeline accumulated in a confined room.

Officials from Titas Gas visited the spot on the day of the accident and claimed that they had no connections on the second or third floor. Their only line was on the ground floor.

Safiqul Gani, Officer-in-Charge of New Market Police Station, claimed that pipelines evidence of gas connection on the third floor. An investigation was being done whether the explosion was from the gas leakage.

Moghbazar Explosion

Twelve people died from an explosion on the 4th floor of a building at Moghbazar in Dhaka on 27 June 2021. CTTC is still investigating a case filed in this regard. Officials involved in the investigation claimed that the negligence of Titas Gas both at Siddique Bazar and Moghbazar is almost similar. In both cases, leaked gas accumulated in the confined air-conditioned rooms and sudden sparks led to the explosions. All symptoms appeared similar. The casualties were similar. In both cases, parts of the buildings have been blown on the adjoining roads. These caused greater losses of lives and properties.

One source at the CTTC claimed the negligence of Rajuk authority alongside TGTDCCL in the Moghbazar accident. It was a 60-year-old dwelling house. Still then, it was being used for commercial activity. The process of issuing charge sheets against the responsible officials of TGTDCCL was ongoing. However, TGTDCCL claimed that the explosion was not from gas escaping the Titas Gas line, but maybe from the sewerage line. Explosion at Tallabag Mosque, Narayanganj

Another major gas-induced explosion at the air-conditioned Tallabag Mosque in Narayanganj happened on 4 September 2020. Thirty people were burnt to death. Eight Titas Gas employees were found responsible for their negligence in duties as per the findings of an initial police investigation. The investigation also evidenced that TGTDCCL did not replace the leaking old, dilapidated gas distribution line. The mosque was constructed over that gas pipeline. Gas leaking from the line accumulated inside the air-conditioned mosque. There existed an illegal power line in addition to a legal connection there. The accident happened while switching over due to a power failure through the mainline during the Jumma prayers.

Explosion at Alauddin Tower

It was the month of Ramadan. An explosion during Iftar at Alauddin Tower, Sector 7 of Uttara Model Town, killed 7 people. Fire service investigation evidenced that the accident happened from the natural gas accumulated in the basement of the building. The accident happened by switching on the light for the evening prayers.

There is no end to such incidents from natural gas leakage. A gas pipeline leakage was caused during the construction of a drain at Banani. Gas finding its way into the sewerage line reached the bathroom of the 4th floor and exploded. Luckily there was no casualty.

A UNB report states 82 deaths in Narayanganj alone over the past three years from natural gas-induced explosions. The casualties must be higher in greater Dhaka areas. Although the leaking Titas gas pipelines are major culprits, leaking biogas from sewerage lines and inefficient use of LPG for cooking is no less responsible.

How Safe Are the Gas Distribution Networks?

TGTDCCL, KGDCL, BGDCL, JGTDSL, PGCL and SGDCL are entrusted as local distribution companies with the task of gas distribution across the gas franchise. TGTDCCL is the largest among those.



A view of the building near science laboratory after explosion

They are distributing gas to power, fertilizer industrial, commercial, domestic, and CNG in the huge area including 2,700 square kilometer area of Dhaka, Narayanganj, and Gazipur. Munshiganj, Manikganj, and greater Mymensingh. KGDCL in Chattogram is the second-largest distribution company. The lone transmission company Gas Transmission Company Limited delivers gas to all distribution companies evacuating it from upstream production companies and the RPGCL's RLNG supply facility. Though no major gas accident has happened yet in the GTCL-managed gas grid, the existence of many leakages has been reported. Recently, a private company has started surveying to identify the leakages with the possibility of a project for leakage management under carbon trading. GTCL initially was not interested, but after realizing the benefits extended its helping hand.

Titas Gas Distribution Network is at High Risk

TGTDCCL started gas distribution in 1968 before the liberation of Bangladesh. It expanded since then to a huge franchise in greater Dhaka and greater Mymensingh region. The existence of numerous leaks in the TGTDCCL network is not unknown to any now. Works for the identification of leaks and repairs at Gulshan, Banani, and Dhanmondi have been reported as completed.

Preparation for doing the work at old Dhaka is being done now. Titas no longer has the exact as-built drawings of its entire distribution network. Buildings and infrastructure have been constructed over the pipelines in many areas.

According to the annual report of TGTDCCL 2021-22, 9,926 sources of methane emission have been identified in surveys over 1,682 KM gas pipelines in Dhaka and Keraniganj areas. Of these, 459 locations have leakages. These have been subsequently repaired. Line pipes are wrapped with anti corrosion wrapping tapes before burial underground. Bare pipes get corroded if buried without wrapping. Leakage also depends on the quality of the pipes used. Most of the pipelines in the Titas franchise have outlived their designed life. Indiscriminate excavations of different utility services in the city area very often affect Titas gas pipelines.

A report from the Department of Explosives (DOE) stated that on 10 June 1990 a gas pipeline besides a building at Shonir Akhra got affected during the construction of a road by heavy construction equipment. The affected line was wrapped and buried. Gas leaking from the affected line entered the sewerage line and found access to the branch of a Bank in the building through the toilet. The windows and doors usually remained closed as the

building had central air conditioning. The office was filled with gas during the Eid Holiday. There was a big explosion when the explosive mixture of gas and air got a spark.

How Old are TGTDCCL Pipelines?

TGTDCCL has 12,243 KM gas distribution pipelines in the Dhaka division franchise area. Dhaka city area has about 7,000 KM. 60% of the pipeline is now under risk. Many of these pipelines are 20 to 40 years old. Some lines are replaced from time to time but not maintained under a planned project. A 12 inches Outer Diameter pipeline was constructed from Demra to Tejgaon in 1968-69. Another 14 inch OD-line was built from Demra to Postagola around the same time. From these lines, gas supply networks for supplying gas to domestic users and industries started through the construction of 2-6 inch pipelines from these feeders. During the 1980s and 1990s the gas distribution network witnessed massive expansions in and around Dhaka city. After 2,000 the expansion slowed down. According to relevant experts, most of the TGTDCCL distribution pipelines have outlived their designed life. Domestic and commercial houses having gas connections are now vulnerable to risks. The government has less attention after announcing suspensions of new gas connections. After 2015 the new gas connection was officially suspended. Only a few pipelines have been replaced though most are 20-40 years old.

Illegal and unauthorized connections have compounded the risks. The disconnection drive continues but the elimination of the nuisance now appears highly challenging. In 2021-22, through 288 operations 348 KM illegal pipelines and 2 lakh 74 thousand illegal connections could be taken out.

TGTDCCL network spreads over Narshigndi, Munshiganj, Narayanganj, Manikganj, Gazipur, Tangail, Mymensingh, and Netrokona. Sherpur, Jamalpur and Kishoreganj are outside Dhaka. Of these, illegal connections are mostly in Dhaka, Gazipur,



A view of Moghbazar building explosion

Narayanganj, Mushiganj, Tangail and Narshingdi. Still, over 100 KM of the illegal pipeline is there in the Titas franchise area. The highest concentration is in Narayanganj. There are allegations that an unholy syndicate of TGTDCCL officials under the coverage and blessings of local politicians and influential people is involved in these illegal activities. Tolls are collected illegally month-wise from each illegal user. TGTDCCL authority claims that they cannot bring this nuisance under control despite unleashing a series of disconnection drives. According to them, the reason behind this is the active involvement of government party leaders and activists.

Some experts observed that the lack of awareness of users is among the reasons for gas accidents as well. Burners are often not switched off after use. Inexperienced, unauthorized fitters and even plumbers are used for domestic gas connections even after knowing illegal connections are taken. A report from DOE states that of the 8 gas-related accidents, 5 were from improper installations of gas burners.

Negligence of TGTDCCL

There are allegations that TGTDCCL often ignores complaints of gas leakage. A former Managing Director of TGTDCCL Engr Harunur Rashid Mollah told EP that it is an international practice of odorizing gas at a distribution point for

identifying leakage. If this can be done, it would alert people of gas leakage. Possibly this is not being practiced now. Hence the damages to pipelines these days cannot be immediately identified. Central emergency receives about 500-600 calls every month from Dhaka and adjoining areas. More than 500 of these are about gas leakage. Present ongoing development works also cause damage to Titas pipelines. Accidents also happen from these. In 2020-21 incidents of gas fire reported were 281. In 2021-2022, it increased to 311.

The replacement of age-old pipelines of TGTDCCL is under discussion for a while. A feasibility study has been recently completed. Engr. Harunur Rashid Mollah, Managing Director, TGTDCCL, informed EP that a Tk 1,200 crore worth of project proposal has been submitted to the EMRD for review and approval. It may take 5-7 years to implement the project after the nod.

Emergency Action Essential for Managing Leakage

It is a standard practice anywhere in gas distribution to odorize the gas before supply to end users. Odorant is a special chemical that gives off a pungent odor. It used to be done in TGTDCCL and BGSL. It is essential as natural gas is odorless. An odorant is added for identifying leakage and alerting users. But for reasons unknown, this is not being done now. Leakages can be

identified and brought under control within weeks if the EMRD executive order can make it mandatory for all distribution utilities to use odorant at prescribed doses. The Gas Act has a provision in this regard.

Accidents at LPG Use

Around 60-70 lakh families in Bangladesh now use LPG for cooking. Accidents during use at the domestic level are frequently reported. These do not attract media attention unless they are huge. There is no option to create awareness at all levels of the LPG supply chain. The government and LPG operators must work hand in hand for this. Otherwise, it will also go out of control soon.

Biogas from Sewerage Lines

The sewerage system of Dhaka cannot be termed safe at all. Biogas originates here. Methane is about 70% of the biogas. Though less methane than natural gas, this also creates an explosive mixture when mixed with air. In contact with sparks, this explodes. WASA must ensure the safety of the sewerage system. All organizations involved in different development activities in the city must work in close coordination ensuring that the works do not have a gas, electricity, and sewerage distribution system.

Short Circuit of Power Distribution Lines is a Death Trap

Short circuit-related fire accidents have become very common these days in all places including Dhaka and Chattogram. A survey of fire services found that 38% of recent fire incidents originated from the short circuit in the power supply chain. Utilities and consumers, both are responsible for these. But utilities must check whether the works at the consumers' end have been done correctly before giving connections. There must be arrangements for checking connections at regular intervals. Engr. Mizanur Rahman, a former Member of BERC while discussing this informed EP that there is no provision in the electricity act for giving compensations to the victims of short-circuit-related accidents



Explosion at Tallabag Mosque, Narayanganj

if these happen due to negligence of utility services. He suggested inclusion of this in the relevant act.

What Needs to Be Done?

Urban Planar Architect Iqbal Habib believes that gas leakage-related deaths in modern cities can no longer be tolerated. He termed this as murders. 11 ministries and 56 organizations are now involved in the development activities of Dhaka. City corporations must be given the authority as the single point of contact for the work they do. All the buildings of the city have now turned into bombs. He suggested city dwellers should themselves raise green flags on their rooftops after conducting safety checks of the gas, electricity and sewerage lines. Media should carry out campaigns for this. Every year every building should be issued with a certificate for safe living. Buildings failing to qualify must be abandoned. City Corporation should be tasked with this.

Rajuk in a recent meeting has decided to initiate a process for introducing certification. Private companies will be given the task. A draft policy will be introduced within 30 days. Brigadier General (Rtd.) Ali Ahmed Khan, Former Director General of Fire Service and Civil Defense, suggested creating specific provisions for fixing specific responsibilities of concerned authorities taking into view all pros and cons.

Specific responsibilities will ensure accountabilities. Monitoring will be easier. Side by side frequent mock safety drills will also create consciousness among all.

Conclusion

Modern civic life has no escape from energy use. Energy and power are essential ways of life in every aspect. But safety needs to be ensured at all segments of the supply chain. First and foremost, the responsibility lies with the suppliers. Then it transcends buildings and infrastructure approving authorities. Finally, the consumers and users have their responsibilities toward safe use. All must realize that unsafe use may lead to the loss of their own lives and those of neighbors. The responsibilities of gas distribution utilities must be clearly defined. Required all-proof initiatives must not be delayed for stopping all leakages from the gas supply chain. The use of odorant must be made mandatory in gas distribution. All buildings of the city must be checked and audited for certification for safe dwelling in phases. These also should be annually updated. Of course, these must be done through a transparent process. Even the organization/person(s) issuing the certificate must also be made accountable for his/her work. Otherwise, any one of us may die from accidents for lack of care. We may also have to live life as disabled.

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