Continuous Gas explosions in Nigeria: Causes and Management

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Abstract
This study examined “gas explosions in Nigeria: the causes and management”. The study depended on the secondary source of information. A gas explosion has become a very tragic accident in Nigeria that when it happens, many families morn. For instance, the recent explosion in Lafia, the Nasarawa State capital (10th September 2018) has left over fifty people receiving treatment for various degrees of burns at the Dalhatu Araf Specialist Hospital. As a result of that, we felt there is a need to examine the causes of gas explosions and how best it could be handled to avoid further burns and loss of lives. From our findings; it was discovered that most gas explosions happen as a result of the lack of gas detector instrument in homes and gas plant stations. Even when they are there, it is not properly maintained to be able to detect a gas leak. It was discovered that most people into the business don’t have the expert knowledge on ways to handle gas, and household users equally use gas with lackadaisical attitudes and poor maintenance culture. It was also discovered that state governments don’t stick to the master plan of their respective states and that is why people construct gas plant stations just about anywhere they find space. From the study, the following recommendations were made: it is advisable that we all have gas detection instrument which helps to prevent gas explosion before time. Again, there is a need to educate ourselves deeply on ways of handling gas before using it or going into the business. It is very important that states wake up and ensure that master plans of their respective states are kept, so as to minimize the number of casualties through gas plant explosions. It is also advised that supervisory agencies work aggressively in ensuring that gas plant stations are located according to the master plan of a state which should be far from residential areas, and most importantly, routine checkup should always be done on gas plant stations to avoid further gas explosions

Keywords: Gas Explosions, Causes, Management, Nigeria

Introduction
A gas explosion is an explosion resulting from mixing a gas, typically from a gas leak, with air in the presence of an ignition source. In household accidents, the principal explosive gases are those used for heating or cooking purposes such as natural gas, methane, propane, butane. In industrial explosions, many other gases, like hydrogen, as well as evaporated (gaseous) gasoline (American English)/petrol (British English) or ethanol play an important role (Wikipedia, n.d).

In Nigeria, the country has continued to witness and experience a countless number of explosions. According to History.com Editors, on this day in 1998, a pipeline explosion in Jesse, Nigeria, kills 700 people. The resulting fire burned for nearly a week. Nigeria is an oil-rich country on the west coast of Africa. The oil fields are controlled by several multi-national corporations in cooperation with the Nigerian government. Very little of the proceeds from oil exports reach the average citizen of the country, and millions of the people live in abject poverty. In fact, gas pipelines run right through impoverished villages.

One such pipeline ran through the town of Jesse, where it became commonplace for residents to steal oil from the pipeline to supplement their meager incomes. This is known as bunkering and was taking place on October 18, when a helicopter was dispatched to disperse the people assembled at the pipeline. Just after the helicopter arrived, a massive fireball shot up 100 feet into the sky. The exact cause of the explosion remains unknown (History.com Editors, 2009).

The pipeline explosion incinerated hundreds of people instantly. Others died from agonizing burn injuries. The fire burned so hotly that rescue workers could not approach the scene for six days. Meanwhile, survivors, some suffering from terrible burns, were
afraid to go to the hospital for fear that they would be charged with theft or be blamed for causing the fire (History.com Editors, 2009). This actually marked the beginning of recorded gas explosions in Nigeria.

Gas explosions have become recurring events across the country raising questions about public safety. On 16 January being Monday, 2018, the explosion took place at Magodo, a suburb of Lagos. As at press time, 10 people were feared dead. Before this disaster, there have been other cases in Warri, Delta State, Badagry, Lagos State, Osogbo, Osun State, Owerri, Imo State and Nnewi in Anambra State (Leadership, 2018). There are others in homes and remote villages out of the sphere of coverage of security and regulatory authorities that escape the public glare. Always, when these explosions occur, they record casualty levels that should raise the red flag. In none of those explosions was anyone held accountable or demands for compensation made. The danger in these incidences is the possibility of collateral damage as these plants are located in mostly residential areas which expose the people to avoidable hazards to their lives and property (Leadership, 2018).

Below are recorded incidences of gas explosions in Nigeria:

- On September 10, 2018, there was a gas explosion in Lafia; the Nasarawa State capital has left over fifty people receiving treatment for various degrees of burns at the Dalhatu Araf Specialist Hospital. The explosion which happened on Monday morning at about 10am was said to be as a result of gas leakage from Monaco gas refill station located in the premises of Natson petrol station. An eyewitness, Mr. Livingstone Chukwu, said the leaking gas did not cause immediate damage to the gas and petrol stations until it made contact with the exhaust of commercial motorcyclists setting over 20 ablaze in an instant as cars on the road also caught fire burning the occupants. The raging fire from the road eventually engulfed the petrol and gas stations burning them to ashes with all the persons in the station at the time (Nadi, 2018).

- On August 11, 2018, five persons died in an explosion which rocked a gas shop near Okwe Market, Oshimili South Local Government Area of Delta State. The inferno also razed three shops. The victims include a four-month-old baby; a three-year-old child and their mother simply identified as Ada. Two teenagers who had gone to purchase biscuits from a provision shop near the gas shop were also killed. The Nation gathered that the incident, which occurred at about 1.30 pm caused pandemonium in the community. A witness told The Nation that the fire started from the gas shop after a cylinder spilled its content into the air, causing two smaller cylinders to fly into neighboring buildings. The source said further that a stove used by Ada to prepare a meal for her children triggered the fire when its smoke came in contact with the gas spewed into the air (Aiwerie, 2018).

- On January 12, 2018, a midnight gas explosion sent panic around Ejere community in one of the creeks around Warri South Council Area of Delta State. Although there was no casualty, The Nation gathered that residents of the Itsekiri community, who were terrified by the massive blast, were already running out of their homes to make for the open bushes to seek refuge. A reliable security source told The Nation that the incident, which occurred at about 4.30am, was an explosion from a gas pipeline operated by the Nigerian Gas Company (NGC) and was believed to have been as a result of a system malfunction. A community source, who spoke under conditions of anonymity, told The Nation that the explosion shook the houses in the community to their foundations, adding that most people panicked because the explosion was initially taken for a militant attack (Ogundele, 2018).

- On March 22, 2017, one person was injured when an explosion occurred at a cooking gas retail outlet at Ileleji Street, off Fani-Kayode Road, Warri, Delta State. The incident, which occurred about 7pm at RMC cooking Gas plant, The Nation learned, following a minor slip of discharge hose while gas was being discharged from a tanker. The 27-year-old victim, whose name was given as This Eruaga, said he was discharging gas from a tanker into the reservoir of the plant when the hose disconnected, adding that the next thing he heard was an explosion. I cannot tell what
caused the explosion. All I know is that the hose pulled off (Ogundele, 2017).

- On August 24, 2016, a welder was killed, and a soldier critically wounded on Wednesday morning in an accidental explosion that occurred at a welder’s shop close to the central roundabout along Potiskum road in Damaturu, Yobe State capital. One petrol hawker close to the scene of the explosion was also wounded in the process according to an eyewitness, Ibrahim Imman. Ibrahim disclosed that the welder’s body was shattered from the heated pipe which also hit the soldier who was monitoring the work (Duku, 2016).

- On July 29, 2016, a 68-year-old woman, simply identified as Mrs. Olawepo and a property manager, Alhaji Nurein Kutere were injured following a gas explosion in a kiosk in Ebute Meta, Lagos. The incident occurred around 3am on Jebba Street near Freeman Street, Ebute-Meta. The explosion destroyed some properties including three parked vehicles. Mrs. Olwepo was injured in the face. It affected her eyes, forehead, and nose. While scampering to safety, Alhaji Kutere injured his leg. A resident of the area Mr. Babtunde Oshodi told The Nation that the explosion was scary. He lamented that the residential area has turned to a marketplace as kiosks and shops outlets dominate it (Abdul and Esemuze, 2016).

- Central Bank of Nigeria branch in Calabar, Cross River experienced gas explosion on March 14, 2016. Four persons were reported dead in the blast while several others were injured (Daniel in Metro News, 2016).

- On July 13, 2015, no fewer than seven persons were killed in Jigawa and two injured when a welding gas cylinder exploded in Ruba village of Kafin Hausa Local Government areas in Jigawa State (Agency Reporter, 2015).

- On July 11, 2015, the police on Friday confirmed the death of five persons during an explosion at a gas station in Suleja, Niger State (Our Reporter, 2015).

- On March 8, 2015, senior staff in the internal audit department of University of Benin (UNIBEN), Godwin Emualosi and his wife, died at the weekend in a fatal gas explosion in their apartment. The late couple was said to have returned home to discover their cooking gas leaking with the smell filling the kitchen. They were said to have immediately evacuated their four children to safety in one of the rooms in the three-bedroom apartment they lived. Efforts by the late victims to remedy the leakage were reportedly unsuccessful as the cylinder exploded in their faces (Ogbemudia, 2015).

- Nnewi gas explosion which occurred on December 25, 2015, led to the death of one hundred people, while others sustained burns. It was said to be caused after a butane gas tank caught fire causing explosion at an industrial gas plant (Niyi in Metro News, 2015).

- No fewer than five persons are feared dead in a gas explosion that occurred at a gas shop on Eliozu area of Port Harcourt (Niyi in Metro News, 2015).

- There was a gas explosion which occurred on Arakale Road, Akure, was reportedly as a result of a leakage at the gas retail outlet, which destroyed about eleven houses and property worth millions of naira, eight people sustained varying degrees of burn injuries while no life was lost to the incident (Daniel in Metro News, 2014).

- A young man who sells cooking gas at Shagari Plaza, Area 1, Abuja narrowly escaped death when the fire of unknown source started as he was vending gas to a customer. According to his neighbors, the young man on noticing the fire tried to drag the gas cylinder far from his shop, but it exploded in the process, causing him burns up to the neck, no life lost but damaged a nearby car (Niyi in Metro News, 2014).

- Three children, including a four-year-old girl were among five persons injured in an explosion that rocked a house in Warri, Delta State on Tuesday being January 15, 2014. The victims, who sustained various degrees of burns, were rushed to three hospitals in a part of the oil-rich town. This is just as the Warri police area command allayed fears that the explosion was caused by a bomb, saying it was the result of a faulty gas cylinder. An occupant of the apartment where the incident took place,
Mrs. Rukevwe Ebatefa, whose husband and children were injured confirmed that it was a gas explosion. Narrating how it happened, Mrs. Ebatefa said: ‘’My husband filled our gas cylinder on Monday night, but we could not use it because it developed a fault. We wanted to use it again this morning (Tuesday), and the same problem occurred. My husband went to the kitchen to fix it, but the next thing we heard was an explosion’’. (Daniel in Metro News, 2014).

Thus, this paper looked at the causes and management of gas explosions in Nigeria and indeed the world.

**Causes of Continuous Gas Explosions in Nigeria**

A gas explosion occurs when there is a gas leak combined with an ignition source. A variety of explosive gases exist, including methane, propane, natural gas, and butane. These gases are widely used throughout the world for heating purposes. Over the years, thousands of people have been killed in gas explosions, and many of these tragic events have occurred while industrial workers were installing or repairing natural gas pipelines (Zinda, n.d).

Below are the major causes of gas explosion according to Zinda:

- Improper use of the gas furnace, or appliance, including leaking due to gas lines being hooked up incorrectly.
- Old worn-out, rusty gas lines are coming from the street into your home.
- Defective equipment, including gas grills, acetylene torches, and other equipment that uses gas as a power or fuel source.
- Violations of codes and standards governing the safe handling of gas or propane.
- Faulty manufacturing procedures used in building gas tanks for automobiles.

**Management of Gas Explosions**

According to the Executive Secretary, Nigerian Association of Liquefied Petroleum Gas Marketers, Mr. Bassey Essien, stressed the need for safety consciousness in the Liquefied Petroleum Gas (LPG) sector. We have to be safety conscious and put all the safety parameters in place and especially with the nature of the product, we need to be very safety conscious and create awareness among the customers.

We cannot play down on safety. ‘’There are a lot of gaps in the LPG sector and most of the gaps exist because of the low level of Nigeria’s socio-economic development’’ the National Chairman, Liquefied Petroleum Gas Retailers Branch of the Nigeria Union of Petroleum and Natural Gas Workers, Mr. Michael Umudu, said.

According to him, there is a large number of substandard and imported second-hand equipment and accessories in the system. He said, ‘’most, if not all, LPG materials and equipment are sourced outside the country and owing to the depreciating value of naira, many importers prefer countries that compromise universally accepted standards. Most of the LPG plant storage facilities are brought into the country after they have been used in Europe, North America and other parts of the world (Ojoye, 2018).

Umudu said the leadership of their branch union had often raised the alarm that special attention should be given to accessories, equipment, and materials used for the LPG because of the volatile nature of the product. He said the proliferation of cooking retail gas outlets in the country had made it difficult for effective supervision and enforcement. It also leads to the involvement of people who are not qualified to do the business. This is the greatest challenge facing the union in recent times. People who know little to nothing about the LPG retailing business are daily flocking into the business. It leads to the proliferation of substandard and fake products.

According to Umudu, the LPGAR’s key programme this year is to fight this menace because they dent the association’s image and endanger the lives of customers and neighbors. He went further to say that, ‘’we are already having meetings with the relevant agencies in order to sanitize the system. We are determined to ensure that henceforth anybody entering into the business meets the Department of Petroleum Resources (DPR) requirements. We have also mandated those who have been in the retail business but don’t meet the requirement that they should upgrade or face severe sanctions’’. Meanwhile, the director, Department of Petroleum Resources, Mr. Mordecai Ladan, during an inspection of the Second Coming gas plant in Lagos on Wednesday, said the DPR had commenced an inquest into the recent fire incident in Lagos. Describing the incident as ‘’very devastating’’, according to him, there was no structure here when the plant was given license for operation in
1996. We are saying this to let people know that that the facility had been located here before the residents started building their houses. The whole place was bushy when they started operation; it wasn’t like this before”. Again, gas plant fire incidents were as a result of poor management attitude or lack of corrective measures. According to Ladan, the department always holds a quarterly interactive forum with the association of cooking gas plants owners to warn them of fire incident especially during the harmattan period (Ojoye, 2018).

At the 2017 Annual General Meeting of the DPR’s Lagos zonal office of November, the controller, Lagos Zonal Operations, Mr. Wole Akinyosoye, highlighted the growth in the downstream gas market, with more gas plants, gas market, with more gas plants, gas skids, and gas retail outlets. He said the depot LPG storage capacity in Lagos increased from 6,000 metric tonnes in 2014 to 30,000MT in 2017, with more capacity expansion underway. He, however, noted that the exponential activities in the LPG market had come with growing challenges, especially on safety. Akinyosoye said, “illegal gas plants and skids are mushrooming, and more people are rushing into the gas business without taking time to familiarize themselves with the modus operandi on skills and statutory requirements for entry and operations. This has led to increasing fire incidents and near-misses in recent times” (Ojoye, 2018).

**Findings**

In the course of this research, we arrived at the following findings:

- It was discovered that most gas explosions happen as a result of the lack of gas detector instrument in homes and gas plant stations. Even when they are there, it is not properly maintained to be able to detect a gas leak.
- It was discovered that most people into the business don’t have the expert knowledge of gas, and household users equally use gas with lackadaisical attitudes and poor maintenance culture.
- It was also discovered that state governments don’t stick to the master plan of their respective states and that is why people construct gas plant stations anywhere there is space. It was discovered that in Nigeria, there is poor supervision from those agencies like Department of Petroleum Resources and others that are supposed to monitor the locations of gas stations and ensure that master plan of a state is adequately followed.

**Recommendations**

From our study, the following recommendations were made; it is advisable that we all have gas detection instrument which helps to prevent loss of life and gas explosion before time. Again, there is a need to educate yourself deeply on gas management before using it or going into the business. It is very important that states wake up and ensure that master plans of their respective states are kept so as to minimize the number of casualties through gas plant explosion. It is also advised that supervisory agencies work aggressively in ensuring that gas plant stations are located according to the master plan of the state which should be far from residential areas and most importantly, routine checkup should always be done on gas plant stations to avoid gas explosions.

**Conclusions**

In all, this study dealt with gas explosions in Nigeria. Use of gas should be adequately used by people with the ground knowledge of it. Going into the business requires deep study of gas management, but funny enough people with the financial muscle always find their way to locate their businesses within residential areas which are always catastrophic to the people when the bad side of it happens. For gas explosions to be reduced there is a need for the Nigerian government to sit up and face this problem that is taking lives due to our own carelessness and poor managing attitude.

**References**


