

SEPTIC TANK / SOAKAWAY PIT, NIGERIA'S CHOICE FOR SEWAGE DISPOSAL

Arc. Boyce A. Odoko

Department of Architecture.
National Institute of Construction Technology, Uromi. Edo State.
E-mail: odokoarch@yahoo.com

ABSTRACT

Septic tank is a wastewater treatment system through pipes connected to it from homes and commercial buildings. It is mostly used at rural areas where homes have no access to municipal underground sewage treatment system. Each time a water closet (WC) is flushed, faucet of the kitchen sink is turned on, and if you do laundry, take a shower, or take a bath, both the wastewater and solids goes through the plumbing pipes system in the house into the septic tank. Septic tank system has two compartments, the septic tank section has concrete slab on the floor. The other compartment is the soak away pit. The soak away pit is of natural earth at the bottom which allows the wastewater to naturally drain the liquids down into the earth. The septic tank section is responsible for treating the wastewater naturally by separating the solid waste from the liquids. The solids being heavier than the waste liquids, settles down at the bottom of the septic tank concrete slab floor. The wastewater flows through an opening at the top of a wall separating the two compartments into the soak away pit which naturally drains the wastewater into the earth.

Keywords: *Septic Tank, Soakaway Pit, Environmental Pollution, Cracked Open, House, Solids, Clog, Water Closet, Sink, Concrete Cover Slab, concrete slab, Drain, compartment.*

INTRODUCTION

Septic Tank is a container of waste solids from homes and commercial buildings. It is built of concrete or concrete masonry units walls. The bottom of the tank is of concrete slab. The Soakaway Pit is also built with concrete masonry units walls, the bottom of the soakaway pit is of natural soil, except the bottom is covered with coarse aggregates (gravel) to allow the fluid to percolate into the earth.

In Nigeria, Septic Tank and Soakaway Pit are a combined system. A single hole will be excavated, concrete masonry wall is built around the four walls, concrete masonry wall is built to separate the pit into two sections. One section is the septic tank, the other section is the soakaway pit. The septic tank and soakaway pit is covered with concrete slab on the top. This is the choice for solid waste disposal system in Nigeria, in all cities across the country. Instead of underground sewage pipes connected to a central sewage treatment plant. In the United States of America, those who live in the rural areas, small towns in the countryside, they have no access to municipal water system, they have no access to municipal sewage waste pipes system. These are the people that use the septic tank and soak-away pit sewage collection system from their houses. A septic tank is a key component of the drainage system. It is an integral part of the sewer disposal system. It is mostly used in rural areas where there is no access to municipal sewer disposal system. It is a small scale sewage treatment system which is used on residential sites. Septic tank and soakaway, a good wastewater disposal system, especially in the rural areas and small suburban communities. The most negative thing about it is the overflow problems associated with it during heavy rain fall. If the soil cannot absorb the heavy rainfall, it cannot absorb the extra effluent from the soakaway also. The environmental protection Agency requires home owners to be responsible for the maintenance of their septic system in the United States of America. Otherwise, the rest of the population is connected to main sewage system that is constructed by the government.

If you have a septic tank system on your property, the key to ensuring its longevity and superior functioning lies in regular, best – practice maintenance. After all, washing machine, dishwasher, sinks and shower, your septic tank is always in constant use so it deserves constant care. The key to on – going maintenance is to ensure that your septic tank is emptied at regular intervals. **Carlowtanks. (2016)**. As waste passes through the septic tank, materials that are non -biodegradable immediately settle to the bottom of the tank. Some solid waste also ends up in the bottom of the tank, and over the years the level of sludge in the tank rises. According to the University of Georgia, septic tanks must be

pumped out every three to five years to remove this sludge and prevent overflow. **Emily Beach. (2017). septic tank**

Soakaways and septic tanks are both excellent method of dealing with excess waste water. The two, however, have very different purposes, and are used together to provide the best wastewater solution. The two systems can seem very similar to the general public, and differentiating between the two and choosing the best system for your requirements can be difficult. A soak pit, also known as a soakaway or leach pit, is a covered, porous – walled chamber that allows water to slowly soak into the ground. Pre-settled effluent from a collection and storage / treatment or (semi) centralized treatment technology is discharged to the underground chamber from which it infiltrates into the surrounding soil. **Tilley, E. et al. (2014)compendium soak-pits.**

Septic Tank and Soakaway pit system should not be built near trees because roots from the trees will penetrate the concrete wall, especially when the septic tank system gets old. Flood season, due to heavy rainfall can course water from underground to rise and fill the septic tank system, this will adversely affect the normal drain process of the tank.

Severe flooding on Haa Dhaal Atoll Nolhivaranfaru Island has caused a sewage overflow resulting in contamination of the island's ground water. According to Nolhivareranfaru Councilor Adham Jaufar, torrential rains on December 18 and 19 caused damage to septic tanks on the island resulting in sewage overflowing bathrooms and onto the streets. **Zaheena Rasheed.(2014).**

When the Septic tank filled up or have cracks, it generates very toxic odor and gas emissions. This is environmental pollution problem when it happens because of the odor that will spread out into the neighborhoods and streets. Septic Tank leakage can also generate underground water pollution which will affect clean water quality. If the Septic Tank is around or adjacent to a river with fish for human consumption, the Septic tank system must be properly maintained. When a septic tank gets filled-up, it tends to put frown on the users' faces; not necessarily because the worst thing just happened but because they start feeling the nauseating odour almost immediately and then the cost of

transferring the waste comes to mind. They must invite a waste disposal agent to do the needful or else they will be unable to use their closets. Well, those days are winding out fast with the introduction of soak-away pits or septic tanks that never fills up. **Engr. Osaz J. Enobakhare.(2015). Constructing septic tank.**

Items such as sanitary napkins, condoms, cigarette butts, are not acceptable to flush as waste items down from the water closet (WC) in the house, because they have the potential to clog the Septic Tank and have it filled quickly. The water closet should not be used to flush food waste because it will make the system full with solids that will get the system stop working. So, the Septic Tank is typically used for wastewater that has a very high level of settle-able solids for effluent from houses. The liquid flows through the waste pipes from house into the Septic Tank, the heavy particles will then sink to the bottom of the Septic Tank. But grease and oil will float to the top of the Septic Tank, the solids that settled at the bottom of the Septic Tank will gradually degraded anaerobically. The rate of accumulation of the wastewater is normally faster than the rate of decomposition, therefore, the Septic Tank will need to be emptied periodically of the sludge and scum. However, any older Septic Tank that is used by large number of people in the house, if the tank is undersized, the tank will need to be pumped empty more frequently as compared to a new Septic Tank system that is sized properly to the number of users.

Every septic tank has a soakaway attached to it. When the septic tank fills up, the wastewater exits the septic tank through an out let pipe, the wastewater is then goes into a soakaway pit and then drain into the soil. But problems often occur with septic tank system, especially during periods of heavy rain fall, the septic tank usually overflow, the wastewater will seep into the ditches and also backing-up in the pipes. These are problems associated with septic tank. Septic tanks are mostly used in rural areas and some suburban communities because of lack of access to municipal sewage system. In Nigeria, Septic Tank and Soakaway Pit is choice for disposing sanitary waste products from rural to urban centers, the Septic Tank and soakaway pit system is the means of sewage disposal. Every building has a Septic Tank and soakaway pit connected to the building, both residential and commercial

buildings. The system is constructed without any government regulation or inspection. Like I stated earlier, a pit will be excavated, concrete masonry unit wall is built on the four sides of the pit. A wall of concrete masonry unit is built to separate the pit into two sections, one is the Septic Tank and the other section is the soakaway pit. The separation wall has a hole almost at the top of the separation wall to enable fluid to flow from the Septic Tank section into the soakaway pit. The floor of the Septic Tank is of concrete slab while the soakaway pit floor is of natural earth, with gravel bed, this will allow fluid to soak down into the earth. Both the Septic Tank and soakaway pit are covered with concrete slab on top. In Nigerian big cities, every residential and commercial buildings are connected to a Septic Tank and soakaway pit system. The building owners are responsible for the maintenance of the Tank and soakaway system. The building owners do not have any means of checking the Septic Tank system, therefore, they keep flushing human waste into the tank until it is full. Most of the time owners will not notice that the Septic Tank is full until, the concrete cover slab is cracked open. At this point, it is too late, because the smell, the bad odor is airborne already and it is all over the neighborhood, creating unpleasant environmental situation. That is environmental pollution. The situation will continue until the Septic Tank system is emptied and a new concrete slab cover is put in place. If several of these Septic Tanks connected to sewage line to several buildings, residential and commercial buildings are cracked open at different locations in the city, the environmental pollution will be devastating.

CONCLUSION

In the developed countries, the septic tank system is used in residential sites in the rural areas where there is no municipal water or have no access to government sewage disposal system. The septic tank system, obviously, has many problems, especially the overflow during heavy rain fall period. When there is flooding event, sewage from septic tank overflows and contaminate the ground water, surface water, surface water bodies where people swim, wells that draw drinking water, canal, lakes, creeks, river, ocean. Etc. Therefore, Nigerian urban centers should be encouraged to invest and implement construction of underground sanitary sewage system, a centralized treatment

technology in cities across the country. Inclusive of rural areas that have access to municipal water. Connect the buildings to the underground sewage system. It will involve a large capital at the initial time but it will pay off on the long run.

REFERENCES

- Carlowtanks (2016). www.carlowtanks.ie/how-septic-tanks-are-empty,
- Emily Beach (2017) septic tank. <https://www.livestrong.com/article/131380-causes-overflowing-septic-tank>.
- Engr. Osaz J. Enohakare (2015) constructing septic tank. <https://www.nvarsigroup.com/?p=915>
- Tilley, E. (2014), compendium soak pits. www.sswm.info/content/soak-pits.
- Zaheena Rasheed (2014) <https://Relietweb.nt/nolhivaranfaru-ground-water-contaminated-flooding-causes-septic-tank-overflow>

Reference to this paper should be made as follows: Arc. Boyce A. Odoko (2018). Septic Tank / Soakaway Pit, Nigeria's Choice For Sewage Disposal. *J. of Environmental Science and Resources Management* Vol. 10, No. 3, Pp. 93-98
