

STUDY RAISES CONCERNS OVER BIODIGESTERS

PHOTO BY RONNIE KIJAMBU

By Charles Etukuri

A study by the department of civil and environmental engineering at Makerere University has raised concerns over the increasing use of biodigester technology in Uganda, warning that poor installation and improper handling of untreated waste could lead to groundwater contamination and environmental pollution.

The study also highlighted structural weaknesses in poorly designed biodigester systems, saying such defects could result in system failures, including the inability to handle organic waste loads.

The findings were presented on Wednesday to stakeholders in the construction sector at Hotel Africana by Dr Swaib Semiyaga, a registered civil engineer and lecturer in the department of civil and environmental engineering.

The research was commissioned by the National Building Review Board (NBRB) following public complaints about the effectiveness and safety of biodigester systems.

Semiyaga said the study was prompted by the rapid spread of the technology, which many Ugandans have embraced as an alternative sanitation solution.

"This technology uses a

culvert similar to those used in road construction. Many Ugandans are now building toilets using this system," he said.

He explained that the system involves placing a pre-cast concrete culvert in a pit, surrounded by stones to create what installers call a soak pit.

"When the toilet is flushed, wastewater goes into the culvert. The water then flows into the stones around it," he noted.

However, Semiyaga said promoters of the technology have made claims that are not scientifically proven.

"We have been having challenges in this country where people promoting this technology use very smooth marketing messages.

They claim it never fills up, does not smell and produces clean water, but most of what they are saying has no proof," he said.

NBRB communications manager and spokesperson Herbert Zziwa said the board received numerous complaints about foul smell and poor performance of biodigesters, prompting the study.

"This study is a result of concerns we got from the public about the compliance and safety of biodigesters. As the board regulating building, we commissioned Makerere



Semiyaga (left) listens to the senior building officer of NBRB, Eric Mugume, during the biodigester consultative workshop at Hotel Africana in Kampala on Tuesday

to extensively investigate the technology," Zziwa said.

He added that feedback from the stakeholder engagement would inform future policy decisions.

"The findings and feedback from this engagement will be further studied, after which conclusions will guide policy, and we shall inform the public."

Semiyaga said the research involved field visits to users and installers, laboratory tests, and technical evaluations of the systems.

The study found that contrary

to popular claims, biodigesters do fill up.

"What we found is that it is not true that this technology does not fill up. There is already evidence from apartments and other places where users are emptying them frequently. It is a small culvert, and the stones around it cannot absorb water forever, so it easily gets full," he said.

The researchers also tested additives such as enzymes, chemicals and bacteria marketed as enhancing decomposition.

"Promoters claim these

ENGINEER REACTS

Deogratious Kabugo, a civil engineer with Life Homes Ltd, disagreed with some of the findings.

Kabugo said biodigesters can work effectively even in highly populated areas if properly designed and installed.

"The most important thing is to know how to build and use it," he said.

He noted that the size of the tank, containment capacity and overall design determine performance.

"We cannot rule out biodigester use completely. I know some that we constructed for schools in Luwero district and they have worked very well. I urge NBRB to continue doing more research so that we can perfect their performance," he said.

bacteria and enzymes eat up faecal matter. We tested different additives on the market and did not find significant changes, showing that the enzymes can effectively break down the material,"

Semiyaga said.

Some users also reported persistent foul smells.

According to Semiyaga, the effectiveness of the technology largely depends on the soak pit, similar to conventional septic systems.

"If the soak pit cannot absorb water, the technology may not be effective. What ends up in the environment is untreated wastewater," he said.

Laboratory tests showed treatment efficiency of less than 20% in removing contaminants.

"This means what goes in is almost what comes out. If used in areas with groundwater, it can easily contaminate it."

He recommended that biodigesters should only be used in dry areas with suitable soil conditions.

Semiyaga also warned against using the technology in institutions with heavy user loads such as schools, apartments and hospitals.

He further warned that the popularity of biodigesters has attracted unqualified installers, leading to substandard construction.

Semiyaga also stressed the need to regulate the quality of concrete used in construction, saying properly designed septic tanks remain the most reliable waste management option.