



IPA DEBATE CLUB QUESTION 12

Is there any advantage in treating black water (wastewater from W.C's Urinals & Kitchen) and grey water (wastewater from showers & basins) separately?

If yes, should this practice be followed.

RESPONSES

Response 1

Greywater can be collected, treated, and reused for non-potable purposes such as toilet flushing and gardening. The treated water is free of biological bacteria and odour and can be directly harvested into the earth.

We also need to specify our requirements for the gray

water treatment plant in the residential apartment building.

P. K. Murugesan

PKM Consultants

PHE & Firefighting design engineer,
L-4274

Response 2

We should follow the system of treating black water and grey water separately. Grey water is easier to treat as compared to black water as it contains less contaminants and pathogens as compared to black water.

Amit Lalit Shah

Partner, Shree Om construction

L-436

Response 3

Advantage of separate treatment of Septage (faecal sludge) and Gray water-

Septage Water: Wastewater generated from Toilet WCs, urinals and pantry or Kitchen. Storage shall be seven days and after mechanically dewatering followed by flocculation, 94.5 % BOD, COD and TSS correction possible. Centrate can be utilized after root zone (Phytotide) technology. Sludge to be dumped to pit with garden leaves and converted into good manure.

(No STP required for offices or institutions).

Gray Water: Hydraulically collected in a small tank,

transferred to a sedimentation pit though coagulation channel, clear water disinfected with UV and recycled in gardening, Makeup water cooling water, Flushing and Car washing without any psychological thought.

Advantages: No huge STP required, No Blower for Secondary treatment, less power consumption (0.1 Kwh for 1 KLD used water) Utilization of 100% used water means one step towards Net zero.

Jeekesh Arora

IPA Jaipur Chapter

L 1044



Response 4

My response to the above question is "Yes" sir.

Because Black water comes into contact with faecal matter which is a haven for harmful bacteria and disease-causing pathogens. Moreover, this waste doesn't break down and decompose in water fast or effectively enough for use in domestic irrigation without the risk of contamination.

Grey water does not come in contact with solid human

waste. This greatly decreases the risk of disease and increases the speed at which it can be broken down and safely reabsorbed into an active garden or lawn.

So in my opinion, definitely there will be an advantage in treating black and grey water separately.

Parasa Kameswara Rao

Sales Engineer - Building Services Products
L-3738

Response 5

Grey wastewater acts as dilution to black wastewater which has high organic load. Separate treatment of black & grey wastewater will need special efforts.

Due to concentration of organic load in black wastewater, treatment scheme to be adopted will have at least two stage biological units to achieve disposal standard. Maintaining the performance also makes it challenging to operator.

Furthermore, Grey wastewater which has lower biodegradable organic load with higher COD will be difficult to degrade with microbial processes hence chemical treatment will be the option available which results into generation of chemical sludge having its own environmentally safe disposal issues.

Also, separation of black & grey wastewater and transfer to treatment location will pose challenges if distance between source of generation and treatment is

long. Since black w/w will have higher settleable (Faecal) solids, drainage slope needs to be high for self-scouring velocity in sewer line. At times, will need to provide flushing arrangement as chances of solids settling & fouling in sewer will be high due to diurnal variations/ usages.

For lower quantity and shorter distances between source & treatment unit, separate treatment can be considered. However, selection of proper technology for grey wastewater treatment and safe, environmentally friendly disposal of bi-product needs to be reviewed before proceeding.

Mr. Sanjay Sharad Javanjal

Hon. Secretary (IPA – Pune Chapter), Director – Deccan Environmental Consultants Pvt. Ltd.

L-1414

Conclusion

Grey water treatment offers a promising solution due to easy public acceptance for reuse of waste for household use. Grey water obviously has less pollutant load in terms of organic load in the absence of faecal matter. The basic treatment will require coagulation, flocculation and sedimentation and may not require biological treatment with aeration.

The blackwater has to be separately treated and due to high organic load will require more aggressive treatment with emphasis on nutrient removal. Root zone technology would be beneficial.

Segregation of BW and GW also entails higher expenditure on account of duplication of pipework, chambers and dual STP. This call has to be taken judiciously. There is also possibility of mis-connections and BW entering into the GW network.

Combined system (BW + GW) when designed, operated and maintained diligently is also able to deliver the

goods. Therefore, proper evaluation of the above circumstances with relation to cost and space needs to be done before arriving at any decision.



Sharat V Rao

Convener, IPA Technical Committee
Managing Editor, Indian Plumbing Today magazine

Note: Editorial Board appreciates the wonderful response of IPA members in answering this Debate Club Q and making the Debate Club as a interesting feature. We will send gifts to each of the respondents for their contribution.