WHAT TYPES OF WASTEWATER DO YOU GENERATE?

One of the largest factors for maintaining proper treatment of a decentralized septic system is the water volume that is flushed through the primary tank. The wastewater effluent is generated by a number of appliances including toilets, showers, sinks, dishwashers and washing machines. Wastewater can be classified as either “gray water” or “black water.” Gray water is typically associated with bathing, showers, bathroom sinks, washing machines and dishwashers. This water contains low levels of nitrates and phosphates, some residual soaps, disinfectants and minimal organic matter. Black water commonly refers to toilets and kitchen sinks where there are higher loads of organic material (human or domestic food waste) that may contain harmful bacteria and other pathogens. The adequate treatment of effluent is based on the gentle settling of sludge material and long periods of processing in the tank. When an increased water flow rate or volume is flushed through the tank, it can reduce microbial efficiency to convert organic matter and cause the system to back up from high volumes of water. This is called hydraulic overload. To maintain adequate secondary treatment, septic tanks should be inspected every six years after installation and pumped every eight years or as necessary to prevent solid overflow to the soil absorption trench which could lead to clogging and failure. As you walk through your house, start looking at your water usage and how it can potentially affect the sewage treatment processes.

Toilets are the main reason for having decentralized septic systems. The urine and fecal matter that is flushed is the primary contaminant treated by the septic processes. Take stock of how many toilets you have in your household. The current federal standard is 1.6 gallons per flush, but most new homes have more efficient toilets that average 1.2 gallons per flush. Some common misuses of toilets that cause issues in septic systems include:

- Constantly running or leaking toilets which add additional water volume to the systems.
- Flushing plastics (wrappers, tampons, condoms, etc.) down the toilet can cause backups or clogs in the system. Plastics are not biodegradable and will not break down in the unit. These items could pass through the tank into the drain field lines and cause water to back up into the house.
- Flushing tissues, wipes, diapers, human hair and other items may also cause clogs in your systems. More importantly, these all add to the volume of sludge settled into the bottom of the tank. If the sludge level gets too high, it can increase the sediments that exit the tank to the drain field causing backup. In this case, pump-outs for the septic system should be done more frequently.

Showers and bathtubs use high volumes of water to clean the human body. Baths are great and relaxing but remember that an average bath uses 50 gallons of water, while a 10-minute shower only uses 25 gallons. The standard shower head has a volume of 2.5 gallons per minute (gpm) which uses on average about 25 gallons of water for a 10-minute shower. Some best practices for reducing shower water are to switch to WaterSense shower heads to reduce

the gpm or take quick showers a few days a week to minimize your water footprint. Any reduction of water volume to the septic system helps reduce the risk of hydraulic overload, especially if you have a full household. Additional misuses of shower and bathtub drains include:

- Excessive amounts of hair products, like shampoo or conditioner, can add oils, greases and fats to the septic systems. These have long-term effects like clogging if not managed correctly.
- Make sure to minimize the amount of hair from shaving or bathing that goes down the drain. This can increase sludge capacity or clog inlet pipes in your septic system.
- In large open drain bathtubs, be careful not to allow plastics to go down the pipes. These will ultimately lead to clogs and back up the water to certain parts of your home. Since plastics are not biodegradable, if they do make it to the septic system, they can cause clogs in the drain field lines.

Bathroom sinks are typically used for activities like washing hands, brushing teeth and shaving. This water can contain small volumes of contaminants from washing hands or shaving, but largely inputs soap, toothpaste and other chemicals into your septic system. At a 1 gpm flow rate, check out Better Water Practices for tips to reduce water usage, which helps alleviate water to your septic system. For reference, if you leave the water running for the two minutes that dentists recommend brushing your teeth, twice a day, that's 1,460 gallons per year. Common things that go down the bathroom sink drains include:

- Excessive amounts of lotions can contain oils, greases and fats. This could potentially cause clogs throughout the septic treatment process.
- Make sure to minimize the amount of hair from shaving that goes down the drain. A small handheld vacuum can be used to transfer hair from the sink to the trash can. Hair in the septic system can increase sludge capacity or clog inlet pipes.
- In large open drain sinks, small pieces of plastic or wrappers could end up in the drain and cause clogs and backups in your home. Since plastics are not biodegradable, if they do make it to the septic system, they can cause clogs in the drain field lines.
- The typical soap for hand washing has antimicrobial properties. Though chemicals like soaps and bleaches aren't normally problematic for septic systems, an overuse of antimicrobial products could kill the bacteria in the septic tanks that treat your sewage.

Kitchen sinks are another source of organic matter in septic systems. There is a wide range of water that goes down your kitchen sink. This water can have soaps or chemicals from washing hands, dishes, floors and countertops, as well as dirt from rinsing vegetables or fruit and various types of compostable organic matter from garbage disposal. Having a garbage disposal alone can increase the solid waste in a septic system by 2.5 times, which increases the amount of sludge and requires more frequent pump-outs. The average faucet has a flow rate of 1 gpm, so when you leave the sink running while preparing food or drying dishes, it can increase the volume of effluent to your septic system. The following are things that should not be put down your kitchen sink drain to prevent issues with your septic system:

- Washing any cooking oils or greases down your kitchen sink will lead to increased floating material in the septic unit and potential clogging hazards for the drain field lines.
- Any meat fats should go into the trash can and not down the drain or disposal. These extra fats can create an imbalance for anaerobic bacteria and drastically increase the sludge volume in the septic tank, leading to drain field line clogging from sedimentation.
- Though soaps, detergents, bleaches and other common household chemicals rarely affect the treatment of wastewater, the excessive use of disinfectant chemicals or antimicrobial soaps could have an adverse reaction on the microbes in the septic system. If these disinfecting chemicals kill the microbial communities in the septic system, the effluent will be untreated as it leaves the tank and potentially cause a public health hazard.

Dishwashers produce water with organic matter and chemical soaps from rinsing dirty dishware. These units typically can have high inputs of fats, oils and greases with up to 6 gallons of water per load. A few best practices include

washing on an energy-saving or eco mode and only when the dishwasher is full. Some of the common issues with dishwasher effluent include:

- Heavy residuals from leftover fats, oils and greases are cleaned and rinsed from dishwashers. It is helpful to wipe all pots and pans with a paper towel to remove excess fat, oil and grease prior to washing. These products can cause long-term clogging and added pump-out maintenance.
- Newer market dishwashers advertise cleaning even the toughest dish scraps. This leads to an increase in organic matter from leftovers on the plate, thus increasing the sludge volume. It is highly encouraged to scrape the remaining food substance into the trash or compost before washing. It may seem like a small thing but keep track of how many times your family uses a dishwasher in a month and think about the effect that may have on the septic system over time.

Washing machines for laundry produce mainly chemical inputs to septic systems but occasionally have debris from things left in pockets or organics from soiled clothing. Washing machines tend to be high-water appliances using roughly 19 gallons of water per cycle. It is best to make sure to only run the washing machine when it's full to minimize water usage. To alleviate extra strain on your septic system, be conscience of the following misuses:

- The chemical detergents at normal use should not have adverse reactions on the septic system, but excessive washing habits or specialty disinfecting detergents could kill microbes in septic tanks. Think about how many loads of laundry you household per week and the type of detergent you use to understand the impact it may have on your septic system.
- Plastics including wrappers, pen caps and other nonbiodegradable materials are commonly left in pockets and can be flushed through the drain to the septic unit. These can cause clogs in lines and result in sewage backing up into the house.

There are many steps that homeowners can take to prevent issues in their septic systems. A good place to start is with a water inventory to see how much water you use per day, week or month. This will give you an idea of strategies to reduce excess water volume in your septic system and prevent overloads from occurring. An efficient septic system can help lead to safer downstream water for communities and the preservation of the surrounding environment.

References

- https://www.doa.la.gov/media/j3hnpfdy/51.pdf
- https://www.epa.gov/septic/how-septic-systems-work
- https://ldh.la.gov/page/wastewater
- https://www.lsuagcenter.com/articles/page1733937714693
- https://pubs.nmsu.edu/_m/M106/
- https://ossf.tamu.edu/files/2023/01/B-6176-3.08-Greywater.pdf

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