Septic System Function

I prefer to describe septic systems as "anaerobic separation & filtration" systems: "Anaerobic" describes an absence of free oxygen, meaning they can't efficiently process/digest waste. Instead, they are designed to separate solid material in the tank to be pumped out and processed at a treatment plant, then they filter the separated wastewater to improve its quality enough to be processed naturally outside of the leach field.

Septic Tank ("Separation"):

A septic tank works on a principal called "retention time". An "inlet baffle" catches non-biodegradables and prevents big flows of water from the house from churning up the material in the tank, and the "outlet baffle" prevents the bulk of the solid waste from traveling with the wastewater into the field. The idea is that when you are sleeping at night or gone to work during the day, the 1000-gallon (+/-) tank sits "stagnant" allowing the accumulated solid waste from the day to settle into its various layers.

Leach Field ("Filtration"):

The liquid that leaves the septic tank may be free of solid material, but I don't think I need to explain that **it is not clean**. The important part is ***how dirty it is***… This is calculated with "Biochemical oxygen demand" (**BOD**), which is a measurement of how much oxygen would be required for aerobic biological organisms to break down the remaining organic material. The problem is that there isn't enough oxygen available underground to combat what we introduce, so the leach field is designed specifically to filter out the worst contributors of BOD leaving a manageable "effluent" for native soils/bacteria.

What Can You Do To Help?

- **Reduce water usage:**
  - Do not ignore leaky faucets or toilets. Turn them off under the sink or appliance until they are properly fixed. Even a slow trickle of water will disrupt the tank settling.
  - Separate peak usage periods: If there has been 6 showers in the morning, save the laundry and dish washer for the evening.
  - Don't empty a jacuzzi tub, run three loads of laundry, run the dish washer, then bath the dog before taking two showers… You get the idea, just try not to overdo it!
- **Respect the ecology:**
  - Common sense dictates that you shouldn't dump paint, chemicals, prescriptions, oil, etc. into a river, the same goes for your septic system.
  - Don't use toilet tank tablets, shower auto cleaning sprayers, etc.
  - "Additives" that you flush or add directly to the system generally **do not work** and **can have a negative impact on leach field longevity**.
- **Get your tank pumped:**
  - Every two to five years; two years for 6 adults, five years for 1 adult or occasional/seasonal use, and 3-4 years if your somewhere in between.
  - If you flush non-biodegradables (feminine products, wipes, paper towels, latex products, etc.), or simply way too much toilet paper, the inlet baffle will eventually clog causing septic tank backup. **Use good judgement, and if your plumbing is backing up call a septic pumper NOT a licensed plumber!**

Leach Field Preservation

The problem…

The cause of 95% of leach field failure is "bio-mat" clogging. The best way to describe what causes that clogging is anaerobic "sludge". This sludge, for the sake of this explanation, is the gooey microbes in the wastewater that is allowed to pass out of the tank but that can't be efficiently "processed" in the leach field. The sand and soil around the leach field is intended to filter out this material and clog/fail over time, this is the intended function of the "bio-mat".

There are some aspects to this material that you can't avoid putting in the system: our gut microbes, oil from our skin, a certain amount of grease residue from cooking, and the natural oils and conditioners in personal care products. This guide is meant to help you make educated choices about the things that *may be* avoidable to maximize the health and longevity of your system. That said, there is no perfect formula, so pick your battles!

Leach field longevity comes down to a simple concept, and "Simple" is the best way to sum it up, but let's start with the stuff you want to avoid:

"Complications"

- "Contains Bleach": Bleach should be thought of like white dye, not an everyday cleaning agent.
- "Oxy-Power": Oxy-Clean is an effective product, but it is terrible for septic systems. You can **spot clean** your carpet or clothing, otherwise leave "Oxy-Powered" products on the shelf.
- "All Natural": These may be good in some ways, but natural oils used in these products (lavender, citrus, peppermint, etc.) are not ideal for septic function. They are acidic, and some can contribute to the 'sludge' that gets stuck in the leach field. Buyer beware.

"Simple"

- "Dawn" dish detergent: this stuff is easily processed naturally, and very effective.
- "Simple Green": Simple is in the name. "Non-Toxic" & "Bio-Degradable" are also positive terms.
- "Hypoallergenic": Especially laundry detergent, but hypoallergenic products don't contain the perfumes, chemicals, and other additives competing products do.
- "Green": This usually means "simple", but like "all natural": buyer beware.

There is a catch…

ALL cleaning products contribute to grease breaking down in the septic tank and traveling into the field, and highly concentrated ones like Dawn and Simple Green contribute more, so it's important to use only what you need to get a job done and be conservative wherever you can:

- "Foaming" soap dispensers for Dawn in the kitchen & for hand soaps in the bathroom will drastically reduce the amount of soap used while remaining effective.
- If you use products like "Simple Green", read the instructions: Simple Green is an engine degreaser!! It says on the bottle to dilute it 1:10 with water for household use.
- The moral of the story is that simple is better but that doesn't mean you can go nuts with anything… Don't clean your sink or tub with engine degreaser, and use a quarter size dollop of Dawn on a sponge to clean one glass before rinsing the rest of that detergent down the drain!

Final Tips:

- Can you use less soap in the dishwasher? Maybe it isn't full, maybe you wipe your plates with the napkins after dinner so they are less dirty… I use about ¼ of what I could put in the cup of my dishwasher and get perfectly good results, how about you?
- Do I need a Laundry detergent with "bleach alternative", "Oxy-Power", and "Lemon Fresh Sent"? Also, never use more than indicated, it does not make your clothes any cleaner!
- Distilled White Vinegar: Laundry detergents and additives claim to do a lot of things, but an appropriate amount of simple laundry detergent with about ¼ cup or so of vinegar does an amazing job with smelly/extra dirty laundry without the need for harsh chemicals. As an acid, it will affect the PH of the tank however, so as with everything with a septic system it should be used in moderation.
- Antibacterial/Antimicrobial/Disinfectant: In my opinion these chemicals are killing us as a species. Factually, they are not as effective as they claim (a study from 2012 showed triclosan only killed about 60% of microbes on participants), they are not necessary or recommended by scientists (at least for non-professional use), and the chemical agents do not go away so they threaten our good biology and ecology long after we use them.
- The Center for Disease Control recommends you wash your hands with **simple soap** to keep yourself safe from viruses and microbes. It is really all it takes!!
- **IF** there is a good reason to want to "sterilize" things (the flu, salmonella, etc.), alcohol based products like Purell and alcohol cleaning wipes kill 99.99% of microbes **on contact** without the long term negative impact of the chemical soaps/wipes. 91% Isopropyl Alcohol in a spray bottle with a roll of paper towels is how I keep myself safe as a septic inspector, as well as how I sterilize my toilet seat, sink handles, and door knobs when someone is sick at home.
- Bleach is not recommended for "sterilizing" your home. Clean with a non-bleach product first, then occasionally use bleach when you have a good use for a white dye (stains on white appliance enamel or tile/grout, occasional white laundry, etc.). A paste of Hydrogen Peroxide and Baking soda also whitens surfaces extremely well, it is less harsh/fumy, and can be easily wiped away rather than rinsed into the septic system.
- Use Strainers in the kitchen and bathroom drains, both to prevent material from getting into the septic and to prevent the use of "drain cleaners". Most bathroom drain clogs are the result of hair, which is completely preventable!

DO NOT…

- Dump Grease or Oil from cooking or anything else in the system
- Dump Paints, Solvents, Chemicals, etc. in the system
- Use Powdered Detergents (they are dried on a mineral that gets stuck in the leach field)
- Flush prescription drugs
- Use a Garbage Disposal (an "effluent filter" technically makes it "OK", but I'm not convinced)
- Use Products that claim to be aids in septic function (Additives DO NOT work)
- Drive Cars/Trucks on, fill over, install pools/decks/additions/hardscaping/etc. on or around your septic components!