Septic Tank Phase Out

Mighty Mac Offers "Onsite" Solution

"Onsite" Aerobic Wastewater Treatment Plants have become increasingly recognized as a necessary element of long-term sustainable development and infrastructures.

The U.S. EPA has focused greater attention on decentralized and smaller-scale systems, stating that when properly managed, these systems "perform effectively to protect human health and the environment, and they are a key component of our nation's wastewater infrastructure."

While septic systems may be a common way of disposing of residential sanitary waste, they are, at best, a temporary solution and come at a high cost to public health. All over America, septic systems have degraded ground and recreational water, creating serious safety problems. Because of failing septic systems, water is not safe to drink. Children are not free to play near contaminated lakes and streams. Outbreaks of waterborne disease become common. Quality of life is eroded. In addition, failing septic systems decrease real estate values." - Environment One

THE BEGINNINGS OF WASTEWATER TREATMENT

What do you know about wastewater treatment? Better yet, do you even care? You might be like most people and just flush anything down your toilet that you think will not stop it up. If you are in the kitchen, do you just put stuff in the disposal and grind it up? How many times have you poured bacon grease down the drain and wondered if its better to run the hot or cold water? Guilty or not guilty?

Its time to take some responsibility and educate yourself. You can be part of the sewage problem or become part of the sewage solution.

Wastewater issues are nothing new. As ancient nomadic tribes began to build more permanent structures, garbage and wastewater became an important concern. No longer could they allow the earth and soil to treat their waste as they followed

migrating herds. In the City of Ur, as far back a 3500 B.C., it was common practice to sweep wastes into the streets and raising the doors as the street levels rose. Around 2500 B.C., in what is now Pakistan, some houses had flushing toilets. As ancient cities became overwhelmed, they diverted their wastes to rivers, slowly polluting them one by one.

The Minoan culture on the Island of Crete between 1500 – 1700 B.C., used a terra-cotta piping system similar to the ones we use today. The Greeks had the first garbage dumps and the Romans' waste treatment methods were the most developed prior to the 19th century. Even with their advances, Rome was still an unhealthy city, and with the fall of the Roman Empire, sanitation technology entered into its "Dark Ages", which lasted a thousand years.

After the major plagues of the 12th century, waste management became a priority. In 1372, England's King Edward forbid dumping "harmful things" into the River Thames and in 1388 Parliament "forbade the throwing of filth and garbage into ditches, rivers and water." The cesspool was one technological breakthrough during the Renaissance, although it wasn't until the 15th century that a "new" awareness of the dangers of human and animal wastes was recognized.

The septic tank was invented in 1860; it was large and built for communities. "The main purpose of these tanks was to remove gross solids before discharge into the nearest stream or river." The problem then and even today remains, "The effluent was largely untreated and caused pollution of streams and rivers." The pollution of water cannot be solved by a septic tank.

So what was wastewater's driving force for these thousands of years? It's very simple – Disease. In the mid-19th century a worldwide cholera epidemic occurred. (Did you know that we have cases of cholera here in Cabo?) Englishman John Snow traced the disease "from its origin in India to public wells that were being contaminated by privy houses." This basically led the way to sewerage construction and separating wastes from drinking water, even though the effluent was normally discharged into a river.

Sewage treatment soon followed and here we are in Cabo San Lucas, dealing with issues 5,500 years old. Thankfully, we now have the knowledge and technology to deal with wastewater treatment. All we need now is the resolve to do the right thing. Let's have a look at our situation here in Paradise…

Septic Systems, Sewerage Systems & Other Smelly Things

"Man, my septic tank really stinks!" or "Man, my neighbors septic tank really stinks!" or "Man, the windows are up and the AC on and I can still smell that stench!" or "Man, did you smell downtown Cabo today?" or "Man, what's with that golf course? How can people live on that golf course, much less play golf there?" We hear these comments all the time. What we do not hear is "WHY does my septic tank smell so bad?" or "WHY does it stink over by that bridge?"

First of all, septic tanks and sewerage systems give off very little odor and are almost never offensive when they are operating properly. They do give off an odor caused by decomposition of protein, but it is barely noticeable and does not have that overpowering, lingering stench that we know as sewage. So, if it stinks, it's probably your fault, amigo.

"Septic tank" is the term applied to any receptacle receiving raw sewage from a home or business, and "Sewerage System" refers to the system of lines and pipes by which sewage travels from its point of generation to a point where it is treated. Because many people use the terms interchangeably, much confusion exists as to how each functions and why. The septic tank and sewerage system are separate entities and very different processes occur in each. These two devices are also a far cry from what is termed a "Sewage System", where specific things happen or methods are applied in an aggressive manner.

Let's look first at the "Septic Tank" and **what** it does, **how it does what it does and**

why it sometimes (more often than not) smells with a vengeance. The breakdown of organic wastes (sewage) is a purely biological process carried out by bacteria that reduce the wastes to odorless carbon dioxide and water in a matter of hours (48 hours is a good number). This is accomplished in nature by bacteria found in the soil and bacteria found in the intestines of animals and humans. The breakdown of organic wastes (sewage) occurs in a septic tank but with a few differences, such as time, the type of wastes to be broken down, and the presence of the bacteria capable of breaking down the various types of wastes introduced into the septic tank.

The specific **aerobic** bacteria necessary to degrade sewage require air to sustain their life processes (the degradation of organic matter) and are most often the limiting factor in whether or not the septic tank is functioning properly. Septic tanks are usually buried in the ground and are virtually sealed, except where sewage flows into and out of them, allowing very little or no air into the tank. Air (oxygen) depletion inside the tank causes the demise of the beneficial bacteria and an increase in the bacteria capable of living without oxygen. These **anaerobic** bacteria are able to degrade sewage, but at a much slower rate (about 30 days), and are the very culprits causing foul odors.

The typical septic tank installed in even the most expensive homes in the Los Cabos area is a simple concrete box having two chambers and 4" lines in and out. The concrete box may or may not have an inspection hatch/clean-out opening, or may have just a small hole to pump out the tank. The basic design causes solid substances to settle out in the first chamber and water to spill over a dividing wall into the second chamber. Smaller particles of solid material settle in the second chamber, allowing "gray water" to discharge from the tank.

Septic tanks are designed to accept only organic wastes from toilets, **NOT** from kitchens and washrooms. The presence of hydrocarbons (fats, oils, greases, and sugars) produced from cooking and soaps from the washroom upset the bacterial population providing ideal conditions for the odor-producing anaerobic bacteria. The beneficial aerobic bacteria in the settled material begin breaking down the organic wastes and quickly use any available oxygen, resulting in their death.

The anaerobic bacteria requiring no oxygen take up the cause, but in the process produce very strong odors (hydrogen sulfide and ammonia) which can travel back up through the pipes into the home, or escape through any opening. Many homes never experience the odor produced because the tanks are sealed very well or buried very deeply not allowing odors to escape.

Because this process of degradation is really slow, both chambers fill with solid material and require frequent pumping, adding to the homeowner's expense. When the tanks are not pumped frequently, a curious phenomenon known as "short circuiting" or channeling occurs, allowing raw sewage to flow directly through the septic tank without any bacterial degradation whatsoever. This occurrence spells disaster for the Municipal "Sewerage System" and treatment plants. Read this paragraph again, it applies to most of you septic tank owners.

Cabo San Lucas does have a Municipal "Sewerage System" and Wastewater Treatment Plant to handle all the domestic and commercial sewage produced on a daily basis. The sewerage system and treatment plant operate, in theory, just like their counterparts further north, but with some major differences. The amount of time sewage remains in the sewer pipes and the speed at which the sewage moves in the pipes dictate the condition of the sewage entering the treatment plant. These two factors seriously affect the overall efficiency of normal sewage treatment. This is not the correct venue to discuss the Municipal sewerage system and wastewater treatment plant. Just suffice it to say that grease choked, slow moving sewer mains, slow filling holding tanks/lift stations, and an overloaded treatment plant, coupled with already stale raw sewage from residences and businesses, presents the Municipal an extreme challenge with wastewater treatment.

A "Sewage System" differs from a septic tank in that a "Septic Tank" is a passive device where a sewage system aggressively promotes sewage degradation. Stating that a septic tank is passive means that it is left to it's own devices to function properly and depends upon existing anaerobic bacteria to breakdown the organic wastes introduced.

Under ideal circumstances, where only human organic wastes are put in the septic tank at precise intervals, provided sufficient oxygen and the tank is not full of non-degraded material, the septic tank will perform very well. This specific set of conditions does not often present itself in Southern Baja, so, not very many septic tanks are working properly.

When kitchen and wash water flow into a septic tank, it will not function at all and a sewage system will operate with less efficiency. These wastes locally known as "gray water" contain fats, oils, greases, sugars, and detergents, all of which are detrimental to healthy bacterial sewage degradation. The bacteria that consume these compounds are not the same bacteria that degrade sewage. Therefore, the fats, oils, etc. cause terrible odors and fouling.

Most homeowners think their septic tanks are doing very well because there is no odor, but the reality is that the tank must be pumped out on a regular basis. When the toilet flushes, but flushes slowly, it indicates that the septic tank is more than likely full and in need of pumping. It is often said by residents of Cabo San Lucas, that, "I never pump out my septic tank, everything works great, and there is no smell". This can only occur when their tank is well sealed and they live at a sufficient elevation so that their raw sewage problems flow down to someone else at a lower elevation (This includes our neighbors in the ocean).

It is for this reason that septic tanks are now illegal in Baja California. Many of our clients find this fact hard to believe, however, it is spelled out very clearly in the "LEY DE EQUILIBRIO ECOLOGICO Y PROTECCION DEL AMBIENTE DEL ESTADO DE BAJA CALIFORNIA SUR".

Don't join the growing list of those receiving citations and hefty fines for violating this law. Are you one of those people that will just "sneak" in a septic tank because no one will know about it?? It does not matter who told you, you could put in a septic tank; if you are caught, you will be fined, plus you will remove it. The homeowner is solely responsible for violations, and let's face it, whether you are caught or not, installing a septic tank is an irresponsible thing to do.

A septic tank can easily be replaced with a miniature "Sewage System" by installing an approved aerobic wastewater treatment plant. These systems can be added on to an existing septic system or completely replace it. Aerobic systems such as the locally manufactured Mighty Mac, will promote the growth of the beneficial aerobic bacteria, while inhibiting the adverse forms of bacteria that cause odors. With the construction of a new home, the cost is only a little more than a bootlegged septic tank anyway. You can become part of the sewage solution by complying with basic environmental health standards, local wastewater laws and following the guidelines listed below.

Remember that whatever goes down your drain or is flushed down your toilet, must be dealt with somewhere!!

MIGHTY MAC manufactures aerobic waste treatment plants in Cabo San Lucas for distribution in Mexico and the USA, and also supplies and installs water purification systems, pumps, etc.

MIGHTY MAC
Home Wastewater Treatment Systems

"How to be a part of the sewage solution."

The following is a list documenting the various culprits causing the failure of someone's onsite sewage system. Avoiding the below listed compounds and products will save the homeowner or landlord many headaches and money over the long haul just as surely as introducing these things to a sewage system will quickly bring about failure.

In the event that your residence, home, condo, trailer, tent, or sleeping bag, is hooked up directly to a municipal treatment plant, please adhere to these practices also.

1. Do not dispose of fats, greases or cooking oils down the household drains.
2. Do not use a garbage disposal (or at least sparingly), or put coffee grounds, meat, bones, shrimp shells or other food products that are difficult to biodegrade, down the drain.
3. Do not dispose of bleach, fabric softeners, disinfectants, toilet cleaners, sanitizers, anti-bacteria soaps, antibiotics, etc. down the drain.
4. Do not dispose of automotive fluids, such as gas, oil, transmission or brake fluid, greases or antifreeze down **any** drains. No paintbrush wash water or thinners should ever be poured down any drains.
5. Do not dispose of or rinse **any** containers from pesticides, herbicides or other potentially toxic substances down **any** drain.
6. Do not flush any of these things down your toilet: cigarette butts, potato peels, cereal, disposable diapers, dental floss, mop strings, plastic or rubber products, paper towels, sanitary wipes, feminine products (particularly, tampons).
7. Minimize water usage. Do not run water continuously while rinsing dishes or thawing frozen food products. Limit toilet flushes when possible.
8. Run only full loads when using a dishwasher or washing machine and spread out wash days. (i.e. Do not run six loads on Monday and none the other days) Install a lint trap on your washer.
9. Do not use chemicals, enzymes or yeast to "start up" or "clean" your waste treatment system. They are unnecessary and may actually harm the system.
10. Use biodegradable products whenever possible. They are readably available.

(Please cut this list out, laminate it and post it in your liquor cabinet so you can refer to it often.)

MIGHTY MAC
Home Wastewater Treatment Systems

Mighty Mac S. de R.L. de S.V.
Cabo San Lucas
(624) 144-3348
info@h2obaja.com
www.h2obaja.com

AUTHORIZED DEALER