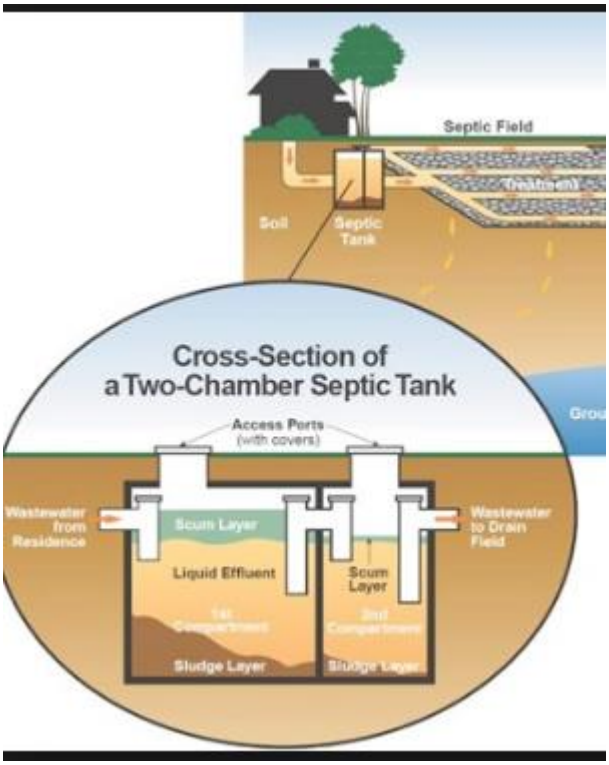

DO YOU KNOW YOUR SEPTIC?

For Brown County Indiana Residents

ABSTRACT

To each homeowner, this guide is a representation of research done to learn about my personal septic system. Hours invested searching through hundreds of sites to validate and understand the information as much as possible seemed worth sharing. With a scientific background, this is just data and information to build knowledge for conversations and to apply to their personal home. The only agenda is to provide information to the homeowner to understand their own septic system, possible issues, and maintenance needs to keep their home safe for them and their neighbors. This journey has been for myself without any ties or connections - only encouragement to share.

Russell, Bandy

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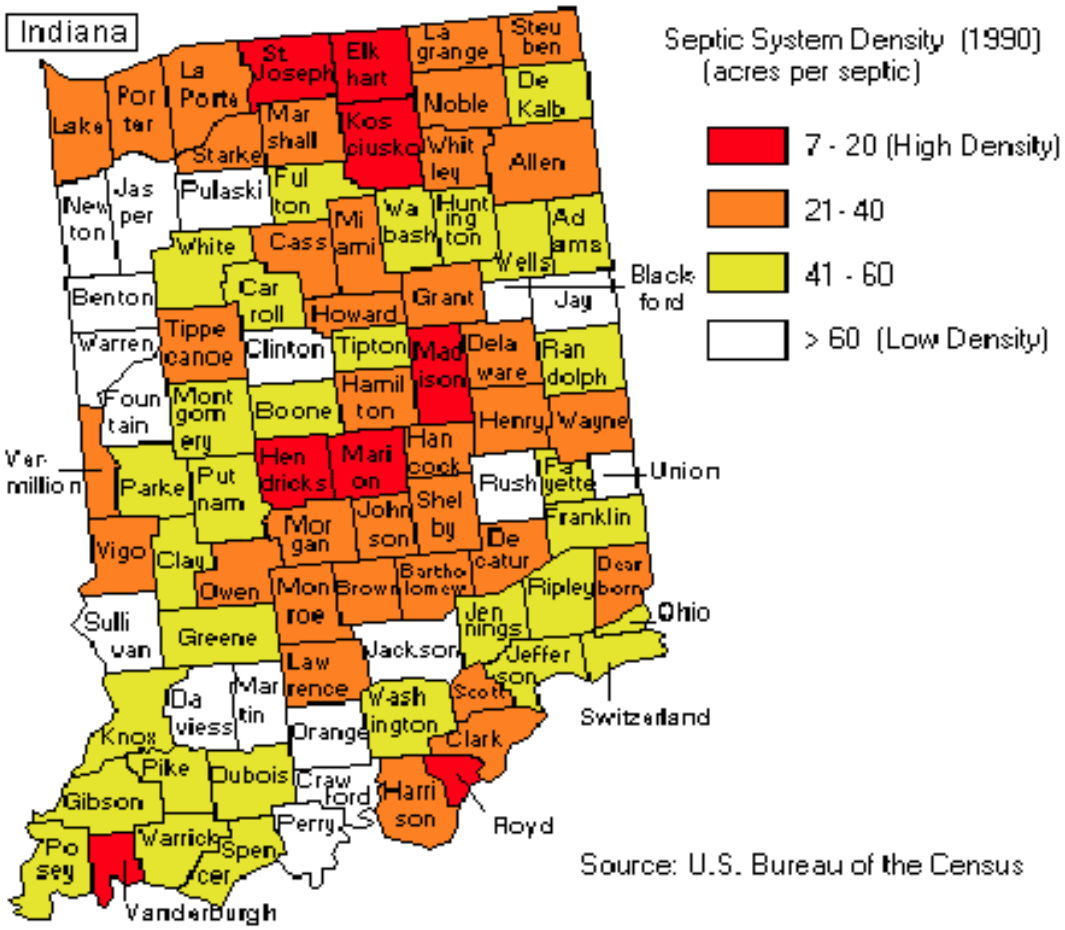
Figure 1.

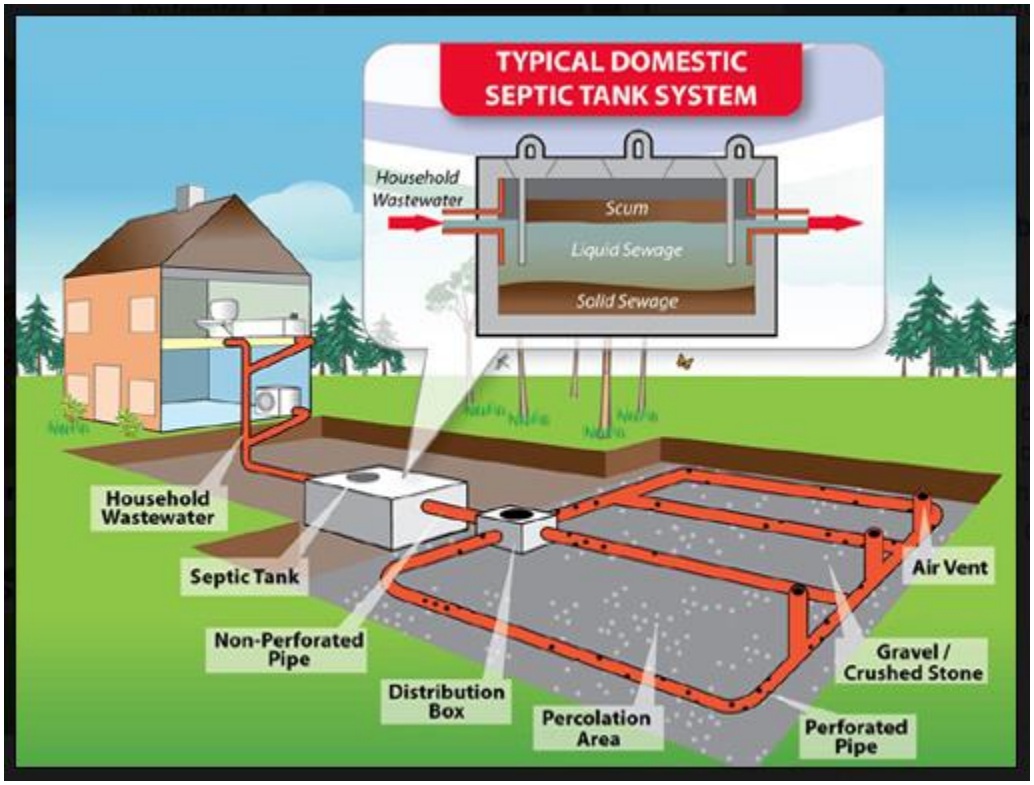


Prepared by: Indiana Land Use Planning Resource Center
http://www.agry.purdue.edu/agronomy/landuse/planning.html

Do you know your Septic?

Learning all about septic systems has not been my favorite thing to do. However, it has become necessary for me to evaluate our current system and where it may fall in its life cycle. In addition, it is easy to just say I don't want another bill, but I want to know the Pros and Cons of a septic system. So I have been doing a lot of researching, listening to others, and making the best sense out of the material. I am sharing what I have gathered to be able to make an informed educated decision for our home and the future of our home.

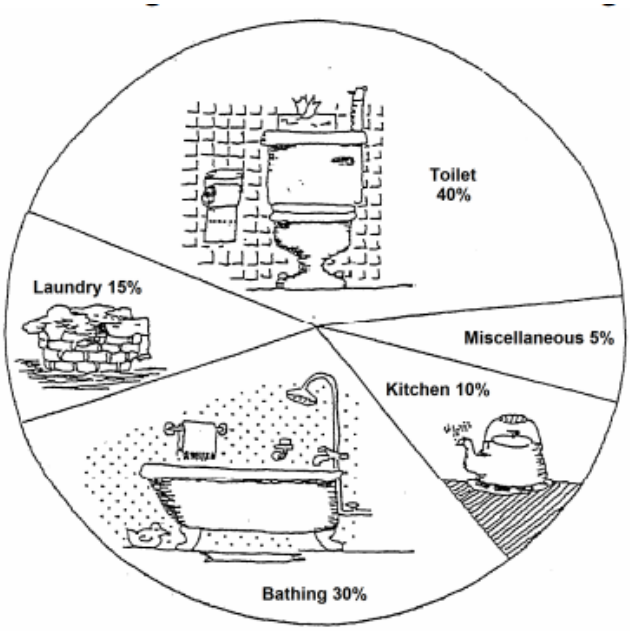
So – How much do you know?



Why does it matter when your home was built?

Codes. State Codes. County Codes. Changes – constant changes! Will your septic system meet both State and County codes if you or your family sells the home?

Knowing when your home was built should give you an idea of how old your system is. The age of your system MATTERS! As well as how well you have maintained it. But if you bought an existing home with an existing septic system – do you know how well they took care of it? Do you have records?



Why does it matter when your home was purchased/ renovated?	Testing – did it originally pass the dye testing to ensure it was working or did it have to be maintained before purchasing the home? Knowing how the system was taken care of can have a huge impact on the longevity of the system.
	It is easier to know if you had the system built, know the exact location, know the depth of each line and the size of each tank.

Why does size matter?

https://www.in.gov/isdh/files/410_IAC_6-8_3.pdf

ALL Brown County Onsite Wastewater Systems are monitored and inspected by Brown County Health Department (Commercial systems are monitored by ISHD)

The size of your home – number of bedrooms – matters to know what the size of your septic tank should be. If you remodeled the home, added rooms, did you also increase the size of your septic system? Is your tank the right size for your home?

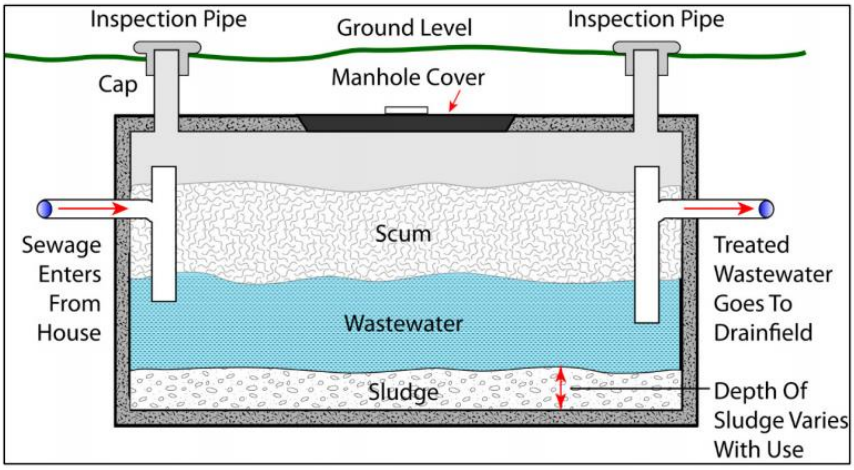
Table III – Required Minimum Capacities for Septic Tanks	
Number of Bedrooms in Dwelling	Capacity of Tank in Gallons
2 or less	750
3	1,000
4	1,250
5	1,500
5 +	1,500 plus 300 multiplied by the number of bedrooms over 5

What type of tank do you have?

Well if you know how many gallons your tank is, then you probably know what kind of tank you have! Or if you don't, you do need to know. It can impact the lifespan of your system.

Steel Septic Tank – They WILL rust out. Depends on the quality of the steel and how acidic the ground is. Roughly, if it is 15 -20+ years old it is likely to have already rusted out the bottom and or the baffles.

Concrete Septic Tank – 40 years plus! HOWEVER, depends on the quality of the concrete (did you splurge for the more expensive tank?) and how acidic the ground is could deteriorate baffles and tank components.



Why does it matter how many acres you have?

First off, do you know where your system is? You can walk it and know what part of your land you cannot use because of it?

This matters if your system fails – where are you going to put a new one? If the next flat area is higher than your current system, your new system will cost a bit more to travel the goods uphill.

Are you in a valley where water doesn't flow out as quickly as it would on a hill? Living in a valley can add challenges to you having a healthy save system.

Why do water sources matter?

The Indiana State Department of Health regulates on-site sewage disposal under Rule 410 IAC 6-8.3 and requires that a new septic tank or soil absorption system to be located at least **50 feet** from a domestic water well.

So you may not meet state code to build a new system if you don't have the acreage and are too close to water sources where you would put a new system. Knowing if you have an option for a new system can provide a since of confidence that you have some options.

410 IAC 6-8.3-57 Separation distances

Sec. 57. (a) All septic tanks, dosing tanks, lift stations, and soil absorption systems shall be located in accordance with Table I as follows:

Table I – Separation Distances		
Minimum Distance in Feet from	Septic Tank and Other Treatment Units, Dosing Tank, Lift Station	Soil Absorption System
Private water supply well[1,2]	50	50
Private geothermal well[1,2]	50	50
Commercial water supply well[1]	100	100
Commercial geothermal well[1]	100	100
Public water supply well, lake,[1,3,4] or reservoir[1,3,4]	200	200
Other pond, retention pond, lake, or reservoir[3]	50	50
Storm water detention area[3, 5]	25	25
River, stream, ditch, or drainage tile[6]	25	25
Buildings, foundations, slabs, garages, patios, barns, aboveground and belowground swimming pools, retaining walls, closed loop geothermal systems, roads, driveways, parking areas, or paved sidewalks	10[7]	10[8]
Front, side, or rear lot lines	5	5
Water lines continually under pressure	10	10
Suction water lines	50	50
[1]The distances enumerated shall be doubled for soil absorption systems constructed where there exist horizons, layers, or strata within thirty-four (34) inches of the ground surface with a soil loading rate greater than seventy-five hundredths (0.75) gallons per day per square foot as determined from Table IV of section 70(b)(8) of this rule, unless that hazard can be overcome through on-site sewage system design.		
[2]The separation distance to a private water supply well abandoned in accordance with 312 IAC 13-10-2(e) may be reduced to ten (10) feet.		
[3]Measured from the normal or ordinary high water mark.		
[4]See subsections (b) and (c)		
[5]Storm water detention area: area designated for the temporary detention of storm water, with the outlet located at the lowest elevation of the depression.		
[6]See section 59(f) of this rule for subsurface drainage system separation.		
[7]Patios without footers, aboveground swimming pools, and sidewalks may be located within ten (10) feet of septic tank, as long as no required access points are obstructed.		
[8]A minimum separation of ten (10) feet is required on all sites.		

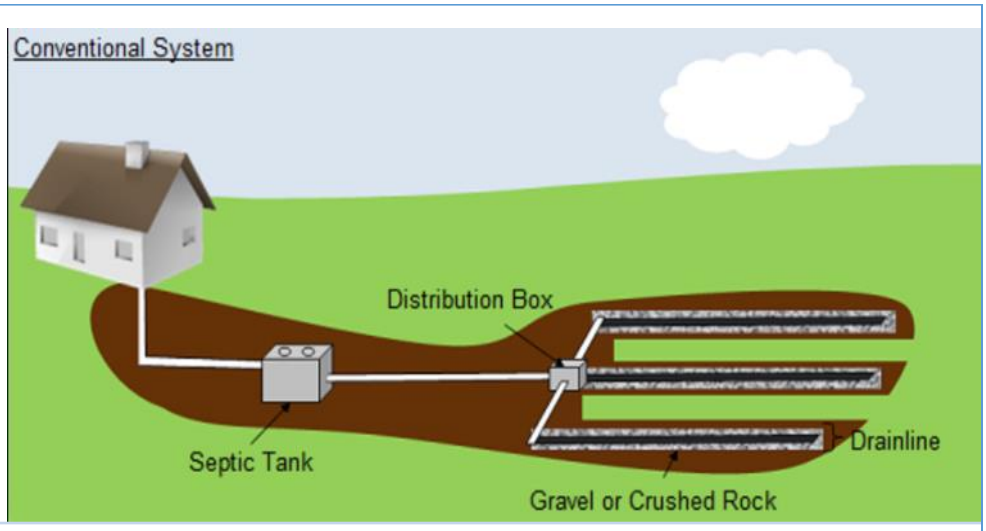
What type of system do you really have?

Knowing what type of system you have is essential in understanding the what is best for your home.

* Conventional Tank
* Conventional Pump System
* Pressure Manifold System
* Low Pressure Pipe System
* Mound System

Standard Conventional System

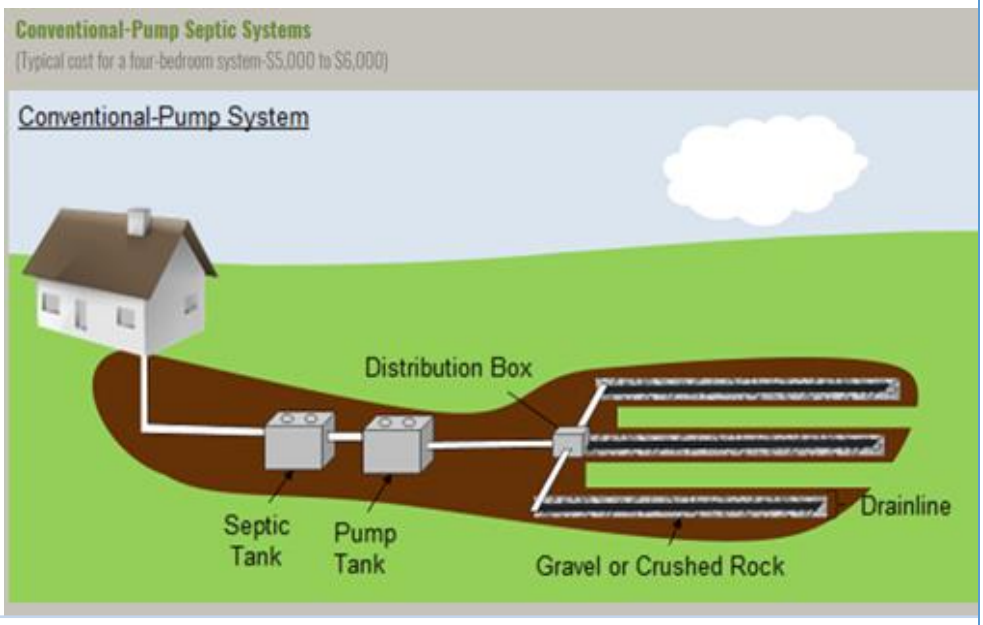
"Gravity System" - uses gravity to move effluent through the septic tank and into the drainfield



Conventional Pump System

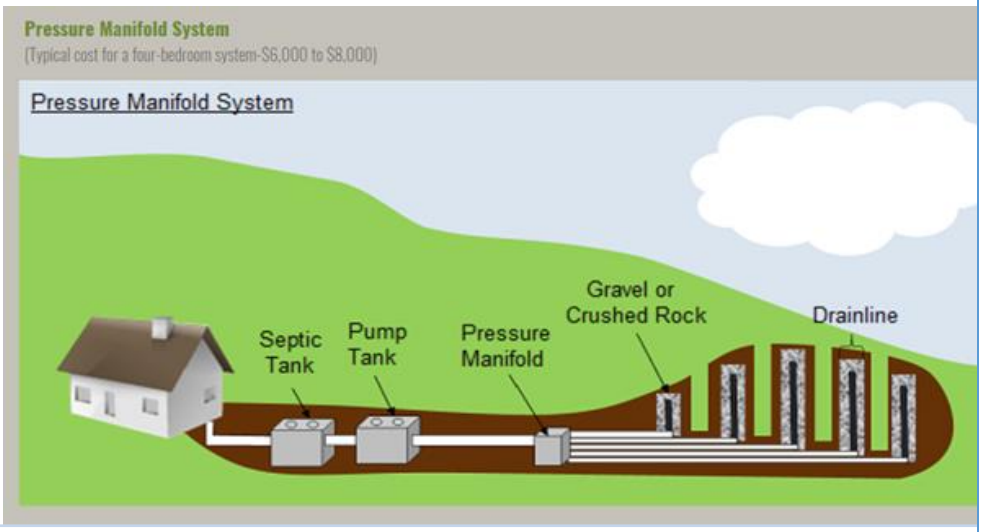
Often in Brown County, effluent has to be traveled up a hill to find a flat spot for the "fingers" or "absorption trenches"

This type could expand the life span of your system as it has two tanks to allow for things to settle and it sends fluid at intervals as opposed to just a gravity fed system that may have fluid in the fingers more often.



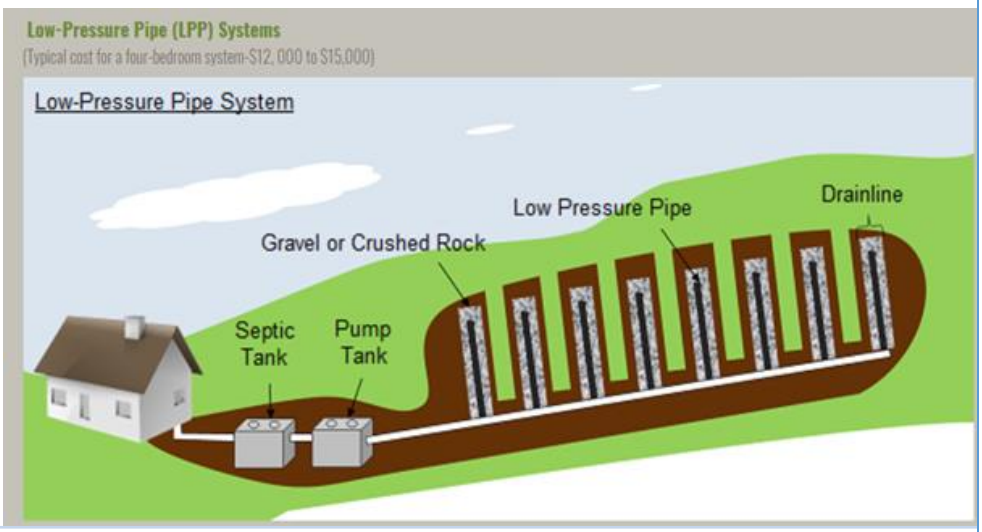
Pressure Manifold System

Distribute effluent more uniformly than gravity systems



Low-Pressure Pipe Systems (LPP)

Shallow trenches, absorption fields can be located on slping ground, improved distribution through pressurized laterals



Mound Systems

.

*Use ground that would otherwise would not work
*Uniform distribution of effluent
*Known level of sewage treatment in the sand fill before disposal
*Greater distance for effluent to travel before reaching ground water

Presby Systems

.

*Use ground that would otherwise would not work
*1/6 the size of conventional system
*No expensive mechanisms
*Adjusts to difficult sites and slopes

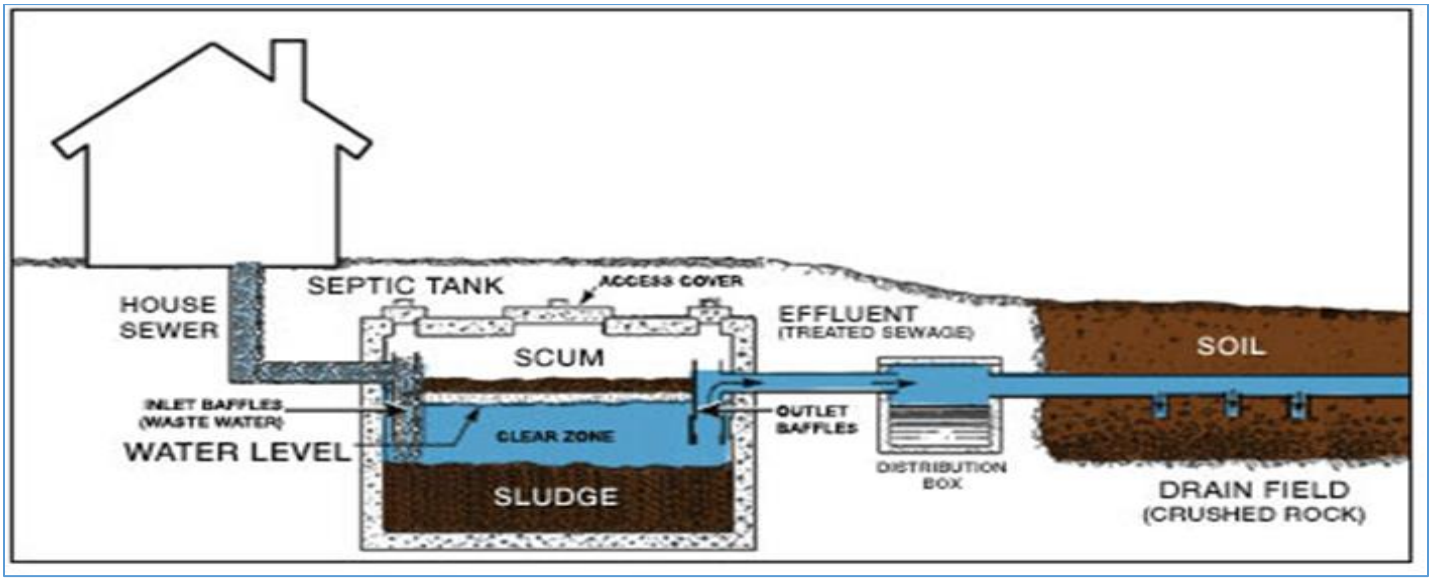
*Treats wastewater more effectively

How does a septic system work?

Wastewater stays in the tank lone enough for solids to separate and settle (forming **sludge**) and grease and lighter particles to float (forming **scum**). Bacterial action partially decomposes some of the solids, which goes into the drainfield as **effluent**.

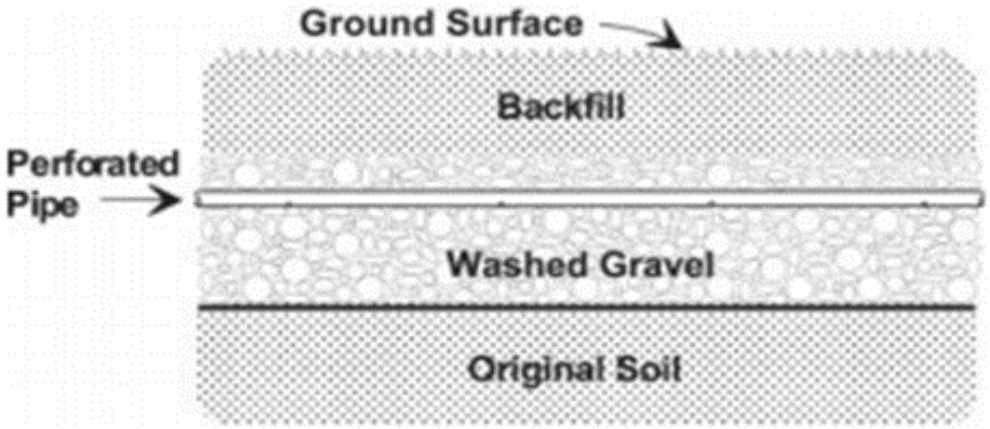
Solids that are not decomposed remain in the tank. The effluent is either gravity fed or goes to a **pump tank** then to a **distribution box**. From the distribution box, the effluent goes to the **fingers** or **absorption field**.

Simple, right? Well that is the big view…



How does the drainfield work?

https://www.co.thurston.wa.us/health/juliet/environment/ss/understanding-ss.asp



The Drainfield The drainfield receives septic tank effluent. It has a network of perforated pipes laid in gravel filled trenches (2-3 feet wide) or beds (up to 10 feet wide) in the soil. Wastewater trickles out of the pipes, through the gravel layer, and into the soil.

The size and type of drainfield depends on the estimated daily wastewater flow and soil conditions. In Washington State, every new drainfield is required to have a designated replacement area. It must be maintained should the existing system need an addition or repair.

How does the drainfield work?

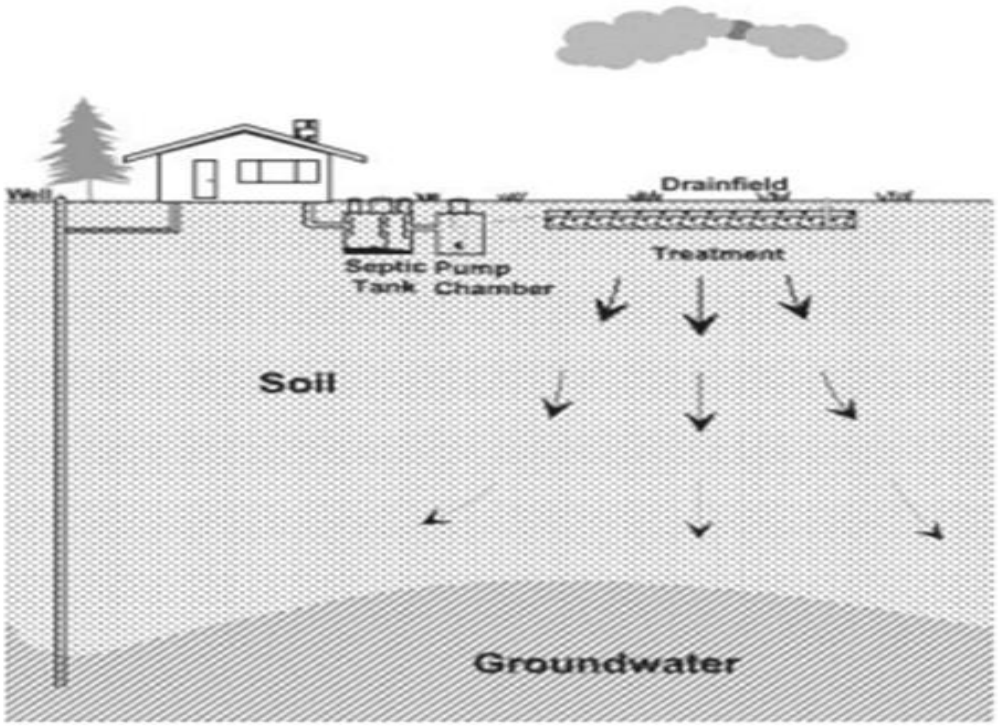
The Soil The soil below the drainfield provides the final treatment and disposal of the septic tank effluent. After the effluent has passed into the soil, most of it percolates downward and outward, eventually entering the groundwater. A small percentage is taken up by plants through their roots, or evaporates from the soil.

The soil filters effluent as it passes through the pore spaces. Chemical and biological processes treat the effluent before it reaches groundwater, or a restrictive layer, such as hardpan, bedrock, or clay soils. These processes work best where the soil is somewhat dry, permeable, and contains plenty of oxygen for several feet below the drainfield.

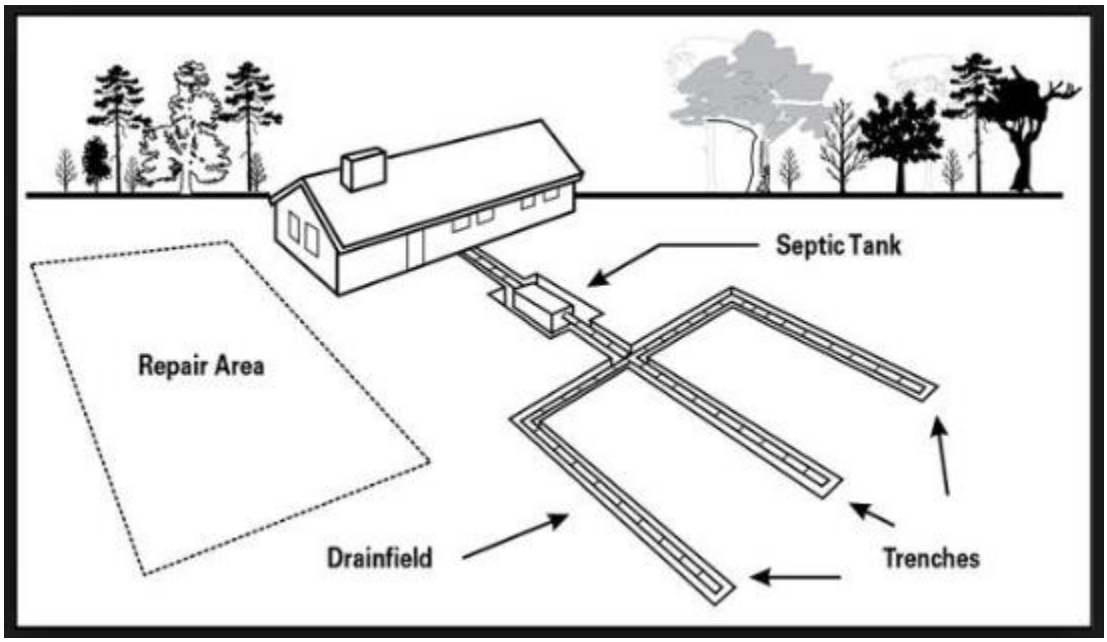
How does the drainfield work?

Note - treatment eventually flows through to the groundwater.

The groundwater is your well water - or your neighbor's well water.



WASHINGTON STATE
DEPARTMENT OF HEALTH



Has your system FAILED?

According to the State and proposed new language for the County (per the BC Democrat):

*The backup of sewage into a structure

*The connection of an onsite sewage system to any drain tile

*Liquid level in a septic tank above the inlet invert

*Liquid level in a treatment unit above that recommended by the manufacturer

*Structural failure of a septic tank or treatment unit

*Water samples documenting contamination of ground water or surface waters by the onsite sewage system

Failure according to iga.in.gov (http://iga.in.gov/static-documents/f/2/3/8/f2386946/TITLE13_AR26_ar26.pdf)

The system refuses to accept sewage at the rate of design application and interferes with the normal use of plumbing fixtures

Effluent discharge exceeds the absorptive capacity of the system

Has your system FAILED?

This lingo means something to someone, but I like to think of failure in a septic kind of like failure in a car. There are many things that can leave you stranded on the side of an interstate. Could be as simple as forgetting to fill the gas or as bad as your engine blowing up. And just like a car, there are some things that are an obvious immediate cause, and others that take time to expose the damage. There are some owners that change the oil every 3,000 miles on the nose, and others that change the oil when they hear their engine not quite sounding right. I bet there are many septic owners that are the same way – or just don't know the maintenance needed for their system.

According to Cornell university, your system is considered to be "failing" when it fails to treat and distribute wastewater effectively, and fails to prevent biological and nutrient contamination of your drinking water well and nearby lakes and streams. The septic system can fail when any part of the system is not operating properly, although it is often the absorption area that cannot function.

What are the Typical places for "failure"?

Blocked pipe between the house and tank

Are fluids from the house making it to the first tank?

Blocked pipe between the tank and septic D-Box.

Is effluent getting to the D-Box with good flow?

Blocked septic system in the field lines (fingers/absorption field lines)

Is effluent present at the lower end of an absorption field (leach field)?

Clogged Soils

Eventually the soils around the absorption field (leaching bed trenches) become clogged and stop passing effluent. Soil type to where this filed is placed plays a crucial role in how long they last as well as what you put down your sink.

Roots

Roots of trees and bushes can enter and block the fingers

Physical Damage

Have you drove over your D-Box?

Have you parked or drove over your absorption field?

“Driving over the leach filed in any vehicle larger than a child’s bicycle is a bad idea. Heavy vehicles may actually crush buried leach field lines, or compress the soils around the leach field. Either of which leads to failure. Driving on or parking on leach fields will destroy them.”

Do you have animals on your absorption field?
They compact the soil like no other. Compact soil is unable to do the job

Why does a Septic System FAIL?

According to Cornell University,

"Most septic systems will fail eventually. These systems are designed to have a useful life of 20 to 30 years under the **best conditions**"
"Older septic tanks with concrete or metal parts degrade over time. Eventually the soil in the drainfield becomes clogged with organic material. Many other factors can cause the system to fail well before the end of its "natural" lifespan. Pipes blocked by roots, soils saturated by high water tables, crushed distribution pipes, improper location, poor original design or installation"

"**The most common reason for early failure are misues or inadequate maintenance by homeowners."**

"When a system is not pumped regularly, solids build up in the septic tank, then flow into the drainfield and clog it."

Some Reasons for failure:

* Faulty Design or Installation of the Septic System
* An absorption field (leach field) placed in unsuitable soil
* A system that is too small for the home
* Soil Clogging – if sludge or scum is allowed to escape into the distribution box the soil will quickly become clogged and the liquid will no longer soak/percolate into the soil
* Low to no maintanence of the system
* Sludge and scum can overwhelm the baffles
* Sludge and scum can get into the fingers and cause the system to fail

What are the signs of failure?

* Toilet NOT flushing properly in all weather conditions

* Grass a little greener in some areas within the absorption field - even in dry weather

* Puddles in your absorption field

* During abnormally wet seasons groundwater can overwhelm your absorption (leach) field and force sewage upward to the ground surface, you may notice areas not drying as fast as others, darker and may have an odor

From Cornell University:
*Slowly draining sinks, bathtubs and toilets.

* Dark foul smelling sewage back up in drains and or toilets
*Unpleasant odors around the house
*Surface emergence of wastewater - spongy soggy areas or standing water - with or without foul odor

*Lush green grass can indicate that an excessive amount of liquid and nutrients from your system is moving upward through the soil instead of downward, as it should. Some is normal, too much indicates a problem

*Nitrate, Nitrite, or coliform bacteria in your well water. These may indicate that wastewater from the septic system is reaching well water (well water should be tested annually).

What tests can indicate failure?

Sample Septic System Inspection and Testing Worksheet can be found here: https://inspectapedia.com/septic/Septic_Inspection_Worksheets.php

Level 0 - home inspection

Visual and Dye Test. Dye is put into your system and an excessive load put into your system to see if the dye surfaces. NOTE: "Using an inadequate amount of tracer dye or an insufficient volume of water for this test will make it meaningless"

More on dye testing: https://inspectapedia.com/septic/Septic_System_Dye_Test_Procedure.php

Level 1 - Equipment

Open accessible covers and inspect equipment. May require tank pump out and inspection

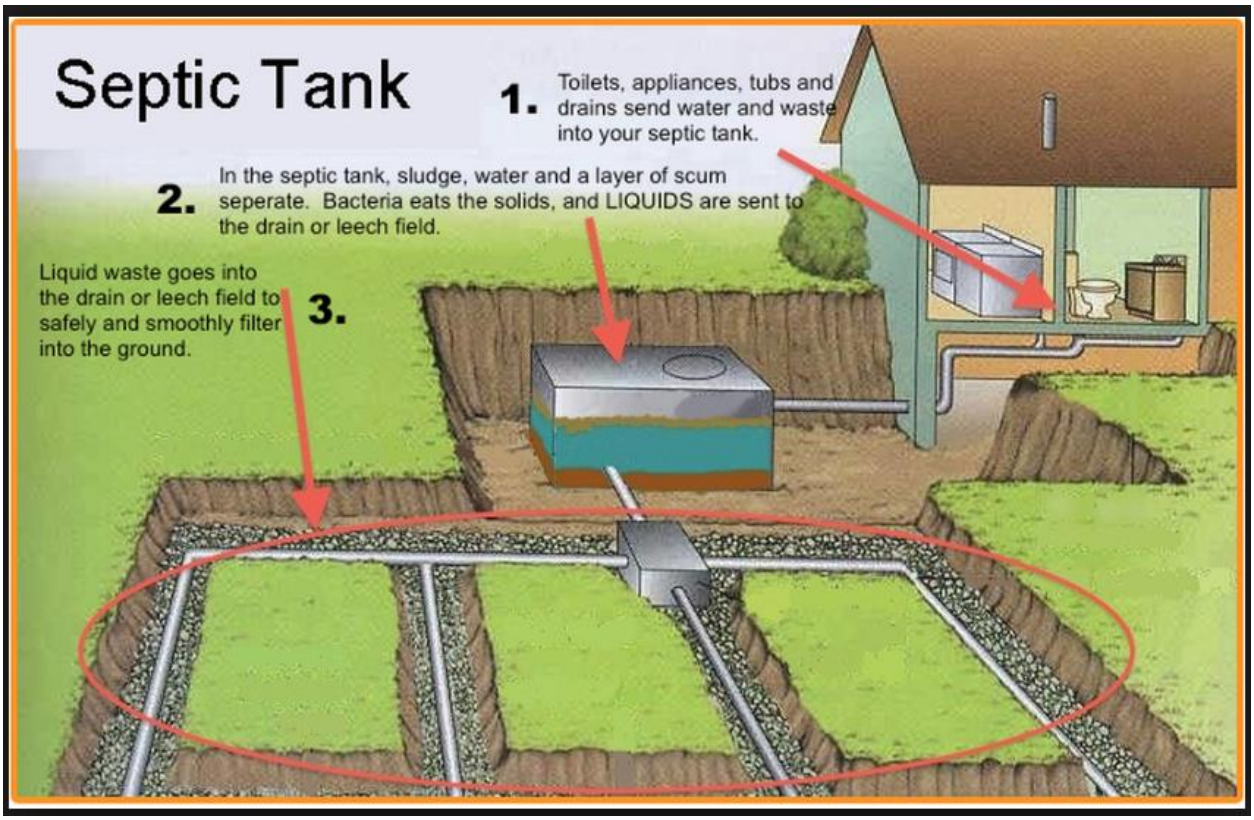
Level 2 - D-Box

Locate, excavate and inspect tank and distribution boxes. Pump and inspect tank, baffles, distibution boxes Determine system capacity, scum thickness, baffle condition, etc.

Level 3 - Leaching

Add test openings in leaching area, soil percolation testing and other engineering work to certify existing system or permit system replacement

https://inspectapedia.com/septic/Septic_System_Inspection_Levels.php



According to the Cornell University:

What to do if your system Fails:

FIRST STEPS

1. Call your local Health Department.

2. Fence the septic system area - if liquid wastes seeps to the surface, keep people and pets away

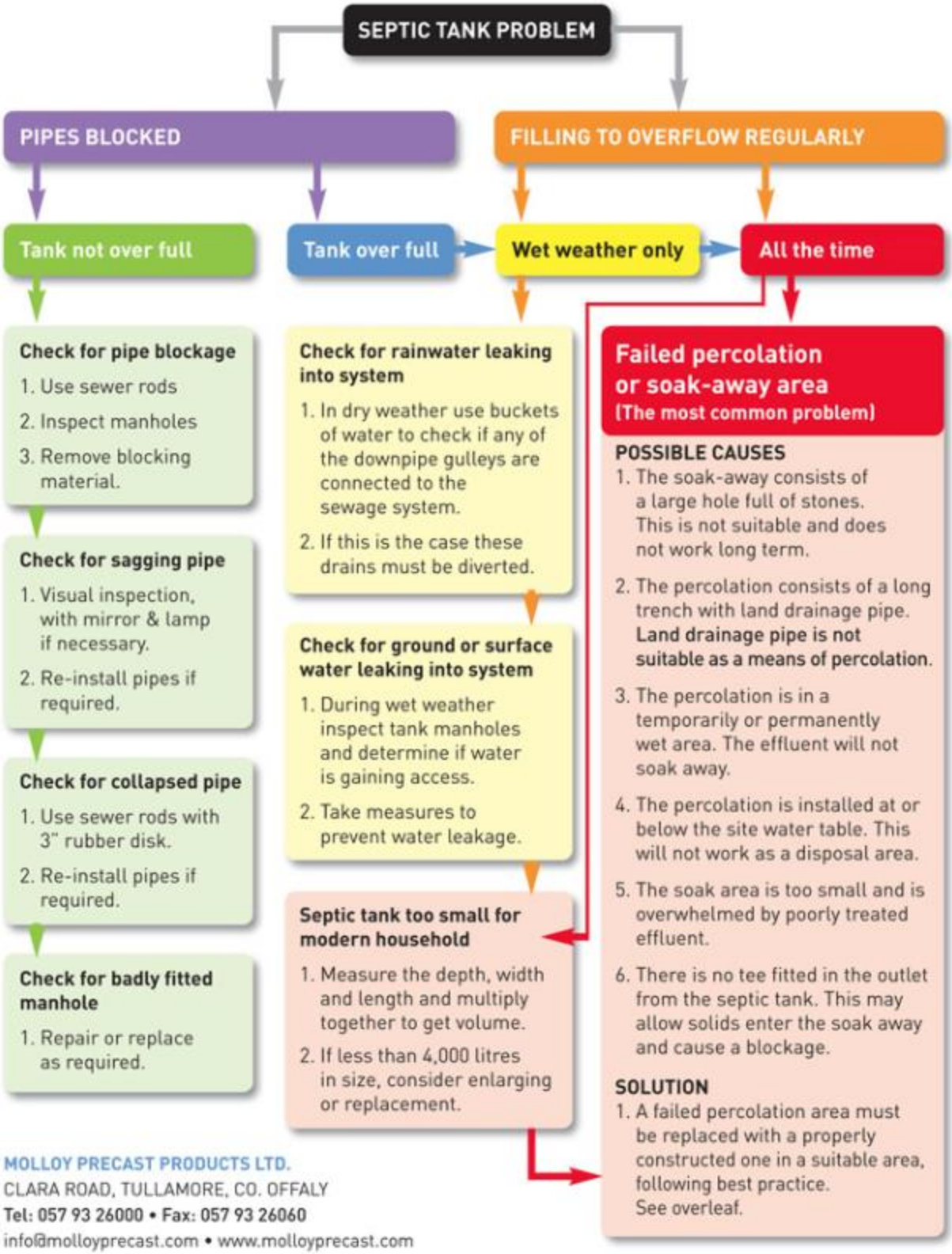
3. Have your septic tank pumped - this will help the problem temporarily, especially when it is combined with drastic water conservation (If the drainfield is still in good condition and the septic tank is large enough for the wastewater volume leaving the household, pumping may be an effective solution).

4. Conserve water in your home - this is particularly efffective if your system has not failed completley. It can help lesson the problem for a short time.

	According to the Cornell University:
What to do if your system Fails: **LONG-TERM Options**	* Replace the drainfield or entire system (roughly $5,000 to $15,000 or more - you can apply for USDA loans) * Increase the size of the drainfield - this may help if the original drainfield was too small for the size of your family or if the soil does not allow water to percolate very well (provided that the tank size is adequate) *Conserve water in your home - long-term * Add ventilation pipes * If periodically saturated soils are a source of problems, consider installing perimeter drains. This involves installing tile drains underground at a distance around the drainfield to help lower soil water levels. * Incorporate advance or alternative treatment technologies - on small lots, property near shorelines, or land with inadequate soil for a traditional drainfielld - Other Alternative/Advanced systems can be considered (OWTS) * If septic system failures are common in your area, consider participating in the development of a small community cluster system or other on-site wastewater treatment system (OWTS) alternative. These intermediate systems are designed for small communities and some rural areas can be more cost-effective than a conventional sewage treatment plant *Connect to a municipal sewage system, if one is available. "Consider the balance between initial and long-term costs versus reduced worry and lowered maintenance."

MOLLOY
Precast Products Ltd.

IDENTIFYING YOUR SEPTIC TANK PROBLEM



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How do you take care of your septic system?

Additives or no additives?

The claim is that additives will extend the system life. However, the other side says that it can generate so much activity in the tank that the solids are held in suspension and forced into the soil absorption system (remember – we only want effluent – free of any solids).

To pump or not to pump?

Seems like there are several opinions about this, but when learning about systems online it is very clear that pumping is neccesary to maintain a proper system

1. Keep accurate records

Know where your septic tank system is and location diagram

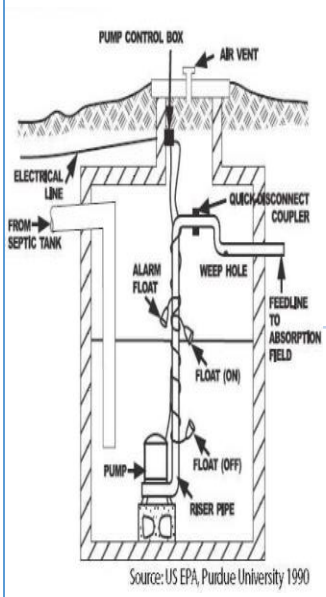
Know the size of tank(s)

Keep a record of maintenance on the system

2. Inspect your system once a year

Check the sludge and scum levels inside your septic tank and assure that the solid levels are not in the “early warning levels”

https://www.co.thurston.wa.us/health/juliet/environment/ss/pdfs/StickTestBrochure.pdf



3. Check the pump chamber, pump and floats every year and replace/repair worn or broken parts

Electrical parts and conduits should be checked for corrosion

Alarm panel test button should be tested (if you have one)

4. Install a septic tank effluent filter or pump screen if your system does not have one

Screening provides an effective way of preventing solids to the drain field pipes

Inspecting/cleaning is quick and easy

5. Prolonged power outage concerns for systems with pumps – minimize outgoing effluent and water usage

Only allow pump to run for 5 minutes every 6 hours until effluent drops to the “off” float level and turn off on their own

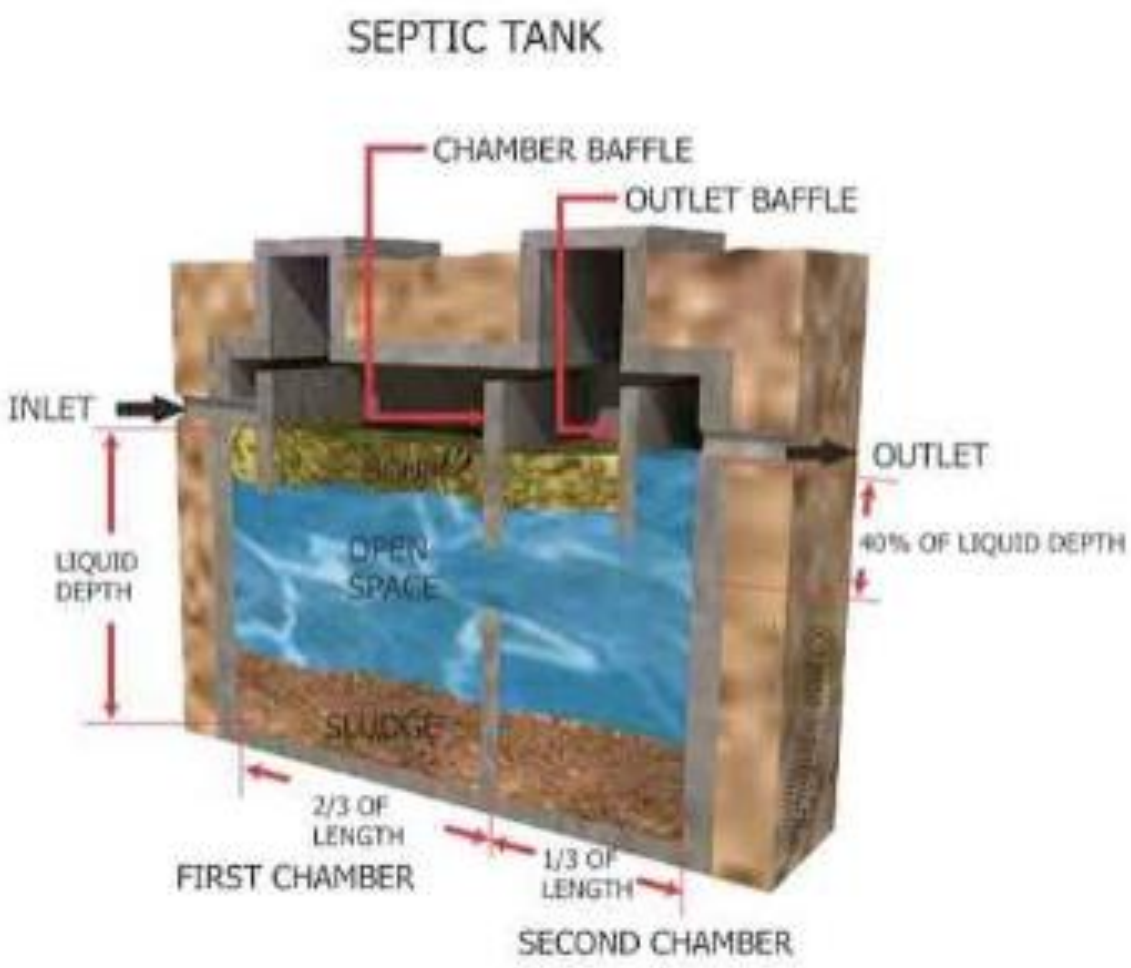
Use very little water

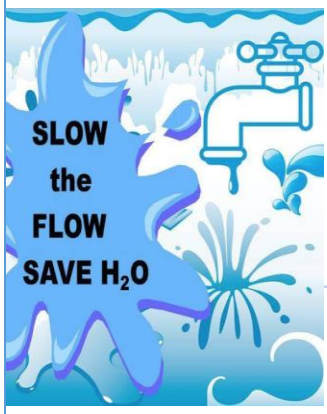
6. Do NOT add any treatments to “help” your system

NO Chemicals

NO Yeast

NO anything that says it will help your system





7. Conserve Water

The more wastewater you create, the more your soil must treat and dispose

By reducing and balancing your use, you can extend the life of the drainfield

8. No OIL down the sink!

9. Keep all runoff away from your system

Roofs, driveways, location should not accumulate runoff water from other sources

10. Do NOT allow anything down the drain that risk clogging the piping, distribution piping or septic tank baffles

NO Diapers

NO Toys

NO Garbage

NO Feminine Hygeine Products

NO Condoms

NO Household Chemicals

NO Flushable Wipes

NO Coffee Grounds

NO Dental Floss

NO Cigarette butts

NO Cat Litter

NO Paper Towels

NO Pharmaceuticals

NO Household chemicals - gasoline, oil, pesticides, antifreeze, paint, or paint thinners

NO Cooking Grease or Cooking Oil

NO Latex Paint Waste
(Per Kenard - if it doesn't go in your mouth it doesn't go down the sink/toliet)

THE DIRTY DOZEN
FOR SEPTIC SYSTEMS

These twelve products & chemicals can have negative effects on septic systems & should be strictly *limited in use*, or even *eliminated*:

Liquid Fabric Softeners.
Fabric softeners coat clothes with slimy chemicals that are harmful to your septic system

Bath & Body Oils.
Avoid using oily lotions & personal care products with micro plastics (micro beads)

Drain Cleaners.
Toxic drain cleaners can affect healthy bacteria activity & impact the ability to properly treat wastewater

Toilet Cleaners.
Most products contain harsh cleansers that can cause long term problems with continual use

Spray Shower Cleaners.
The sanitizing & emulsifying features of these products are very harmful to septic systems

Degreasers.
Degreasers contain dangerous carcinogens that flow through your septic tank & into the soil

Quaternary Ammonia.
Known as "quats", these complex organic salt compounds are found in many products like disinfectants, surfactants & fabric softeners

Prescription & OTC Drugs.
Never flush drugs & antibiotics down the drain - they can kill healthy microbes in the system & cause increased maintenance

Antibacterial Products.
These chemicals kill bacteria & microbes but are NO MORE effective at deactivating viruses than any other soap or detergent

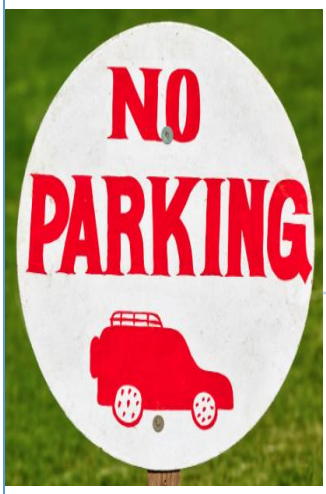
Powdered Detergents.
Dry detergents may have fillers, sealants or extenders that can clog your dispersal field

Surfactants.
Found in almost every detergent, soap & cleanser, surfactants lead to faster solids buildup & the degradation of soil

Construction Debris.
Paint, chemicals, gasoline, oil, pesticides & antifreeze can stress or destroy the biological treatment in your system

(844) 224-AQUA (2782) • www.BetterThanSeptic.com

Source: Sara Heger, University of Minnesota



11. NEVER Drive over the following as it can crush a pipe, collapse a tank and ruin an absorption field (drainfield)

Septic Tank

Septic Piping

Absorption Field

12. Garbage Disposers – they increase the amount of solid waste load on septic tanks – may require that they are pumped more often

13. Have you cleaned the Effluent filter?
IT is in the tank's outlet tee to help remove additional solids from the absorption field.

14. Never enter any septic tank – poisonous gases or the lack of air can be fatal.

15. Check with your local health agency for help with system problems

Many problems can be corrected with a minimum amount of cost and effort

Some may require complete drain field replacement

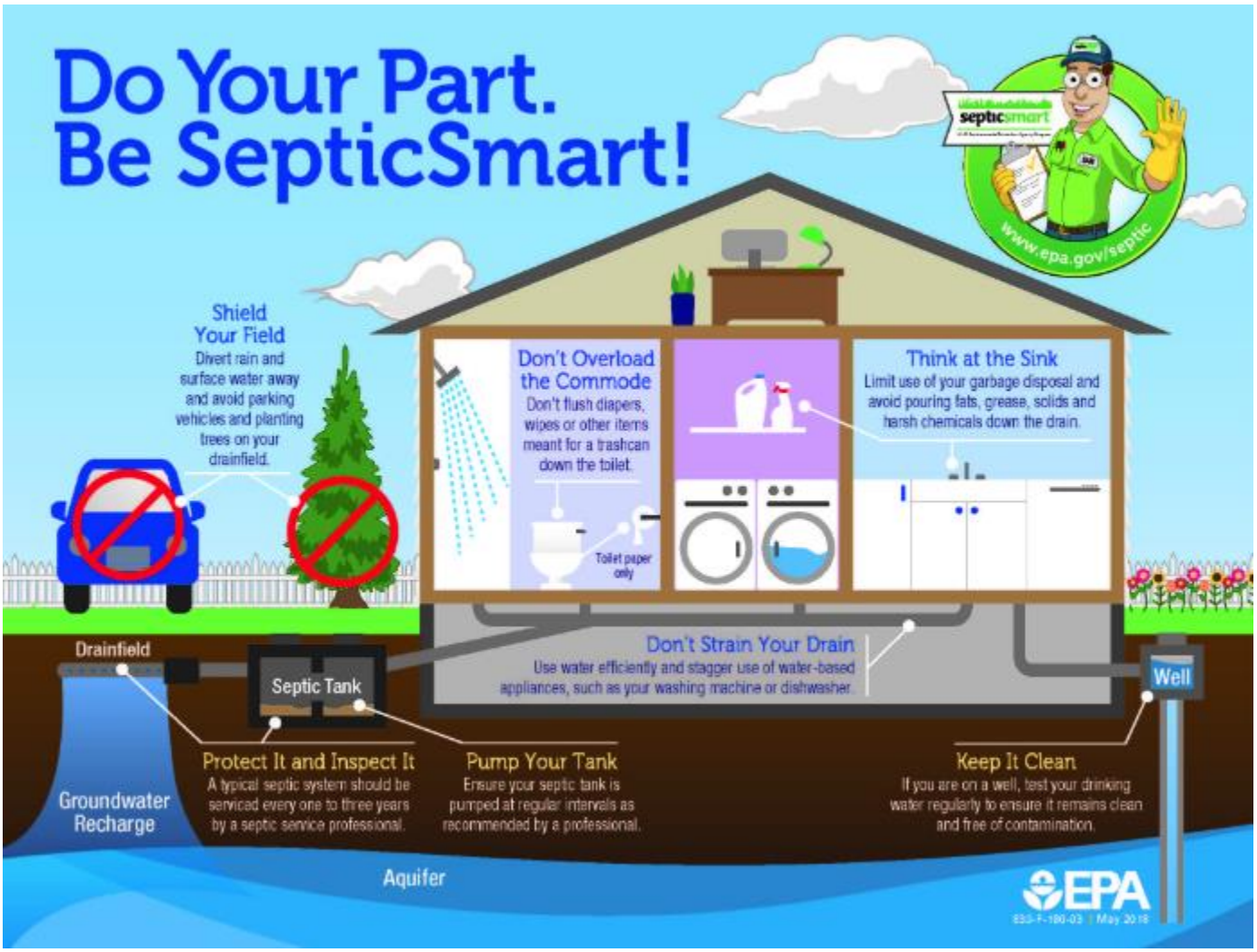
http://www.browncountyhealthdept.org/

16. PUMP YOUR TANK!

The real question...

Have you been preventing "failure" since you have lived in the home, and did the owners before you take as much care?

Resources:
http://www.nesc.wvu.edu/pdf/ww/septic/pl_fall04.pdf;
https://www.co.thurston.wa.us/health/juliet/environment/ss/understanding-ss.asp



Why does it matter that my Septic System is working?

Do you use well water? Does your neighbor?

There are many diseases and bacteria that a good working system prevents from getting into the underground water, creeks, and lakes.

"Household wastewater contains disease causing bacteria and viruses and high levels of nitrogen and phosphorus. If a septic system is well-maintained and working properly, it will remove most of these pollutants. Insufficiently treated sewage from septic systems can cause groundwater contamination, which can spread disease in humans and animals. Improperly treated sewage poses the risk of contaminating nearby surface waters threatening swimmers with various infectious diseases, from eye and ear infections to acute gastrointestinal illness and hepatitis." (https://www.epa.gov/septic/why-maintain-your-septic-system)

Property value of your home and the neighbor's home can be impacted.

According to Cornell University:

There are Health and Economic Effects of a Failing System
The most serious effect is the spread of serious disease from untreated wastewater.
Mosquitoes nad flies that spread infectious diseases can breed where wastewater reaches the surface.
Household chemicals (and medicines) can be poisonous to humans, pets, and wildlife if not treated

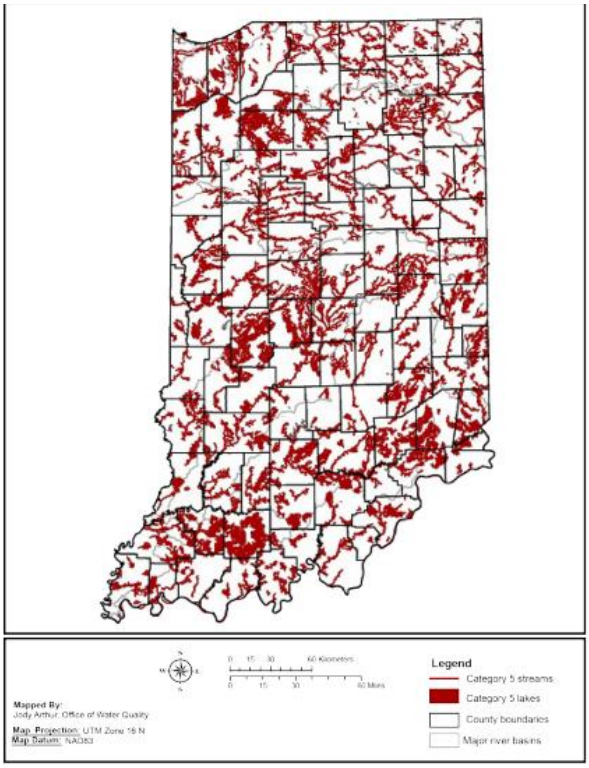
How Your Septic System Can Impact On The Water Cycle

Not in My Septic System!

X Cloggers
diapers, cat litter, cigarette filters, coffee grounds, grease, feminine hygiene products, etc.

X Killers
household chemicals, gasoline, oil, pesticides, antifreeze, paint, etc.

- If your septic system fails then the effluent from it may pollute the water in your well, local streams, rivers and lakes
- Discharges from failing systems contain bacteria, viruses and nutrients that will harm the environment
- These materials can be both bad for your health and the environment. For this reason it is vital that your septic tank is maintained and operated properly and that you do not dispose of medicines, pesticides, paints, varnishes, thinners and other harsh chemicals in your septic tank



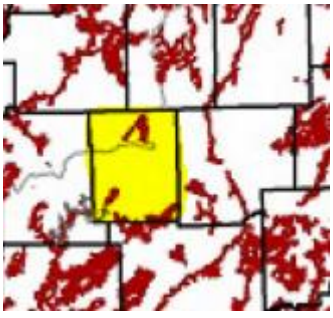


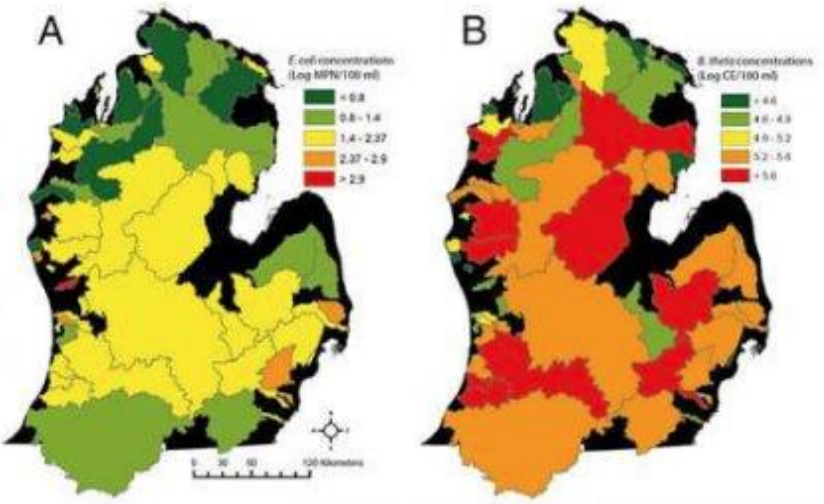
Figure 7. Category 5 impaired streams and lakes in Indiana (IDEM, 2016).

https://static1.squarespace.com/static/566728d25a566834cc2d4f9f/t/589b5943b8a79bc65c3c9122/1486575954531/Water+and+Quality+of+Life+in+Indiana.pdf

ARE *SEPTIC TANKS* CONTAMINATING MICHIGAN'S WATERS?

Michigan State University water scientists have discovered that septic tanks are contributing to human fecal bacteria contamination in the state's waterways. This research is vital for evaluating water quality and health implications, and the impact of septic systems on watersheds globally.

#SpartansWill



(A) E.coli (log10MPN-100mL-1) and (B) B.theta (log10CE-100mL-1) concentrations measured in 64 rivers under base flow conditions. (Areas in black were not represented with samples.)

Read more at rose.canr.msu.edu

SI RESTORATION
FIRE • WATER • MOLD
RECONSTRUCTION

Negative Effects of Raw Sewage

Key Notes

- On average, 7 million people suffer from illnesses caused by exposure to raw sewage per year.
- 7% of those 7 million become severely or fatally ill.

Viruses

Norwalk virus, rotavirus, Hepatitis A, Poliomylitis Virus, Adenovirus

Gastroenteritis
Diarrhea, Vomitting, Abdominal Pain, Nausea, Cramping

Hepatitis A
Jaundice, Fever, Diarrhea, Fatigue, Cramping, Loss of Appetite, Nausea

Poliomyelitis
Sore Throat, Fever, Vomitting, Nausea, Cramping, Constipation, Diarrhea

Bacteria

Campylobacter, E. coli, Leptospria Salmonella, Shigella

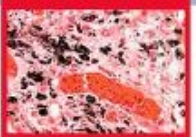
Campylobacteriosis
Bloody Diarrhea, Fever, Cramping, Nausea, Vomitting

Escherichia coli (E. coli)
Bloody Diarrhea, Fever, Cramping, Nausea, Vomitting

Leptospirosis
Fever, Headaches, Body Aches, Chills, Diarrhea, Vomitting, Jaundice, Rash

Salmonellosis
Diarrhea, Fever, Cramping

Shigellosis (Bacillary Dysentery)
Bloddy Diarrhea, Fever, Cramping



Parasites

Cryptosporidium parvum Giardia intestinalis

Cryptosporidiosis
Diarrhea, Loose Stool, Cramping, Slight Fever

Giardiasis
Diarrhea, Loose Stool, Cramping, Slight Fever

@sirestoration

For more information on the dangers of sewage damage or to request sewage damage or biohazard cleanup, visit

www.si-restoration.com

What Diseases are caused from poor sewage?

Diseases caused by germs:

Bacterial:
salmonellosis
shigellosis
diarrhoea
trachoma
melioidosis

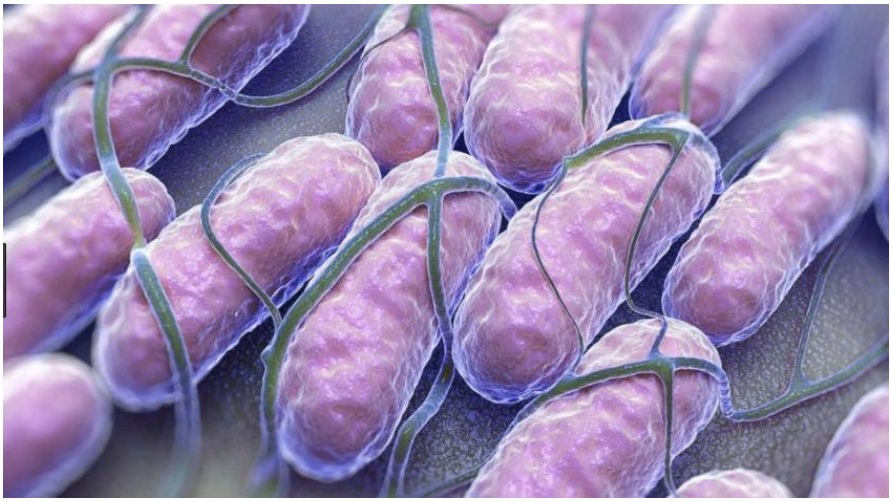
Viral:
gastroenteritis
hepatitis A

Diseases caused by parasites:

giardiasis
dwarf tapeworm infection
threadworm infection
hookworm infection
strongyloidasis

rom IN.gov - a list of diseases Involving Sewage

Campylobacteriosis
***Escherichia coli* Diarrhea**
Gastroenteritis
Hepatitis A
Methaemoglobinaemia
Salmonellosis
Paratyphoid Fever
Yersiniosis
Cryptosporidiosis
Encephalitis
Giardiasis
Leptospirosis
Poliomyelitis
Shigellosis
Typhoid Fever



How are they spread from poor sewage?

http://www.health.gov.au

Directly -
by people coming into contact with sewage or toilet waste (this can happen, for example, when people walk through sewage which has leaked onto the ground from broken sewage pipes)

Indirectly -
by people coming into contact with animals such as flies and cockroaches which carry the germs and parasites in or on their bodies. Dogs and cats can carry germs and parasites too

drinking water which has been contaminated by sewage

What are some other diseases involving Sewage?
(www.in.gov)

Methaemoglobinaemia

Methaemoglobinaemia (also known as "blue-baby syndrome") is a poisoning that can occur in infants during the first few months of life due to ingestion of well water high in nitrates.

Improperly designed septic systems installed in sandy soils are known to cause nitrate contamination of groundwater. Infants who breast-feed can be poisoned if their mothers drink water high in nitrates.

The U.S. Environmental Protection Agency has established a maximum contaminant level for nitrate in drinking water of 10 milligrams per liter, expressed as Nitrogen, or 45 milligrams per liter, expressed as Nitrate. Boiling of water does not remove nitrates; it only increases the concentration.

Campylobacteriosis

Campylobacteriosis is the most common diarrheal illness in the United States. While some people exhibit no symptoms, clinical manifestations include bloody diarrhea, cramping, abdominal pain, nausea, vomiting and fever within 2 to 5 days after exposure to the organism.

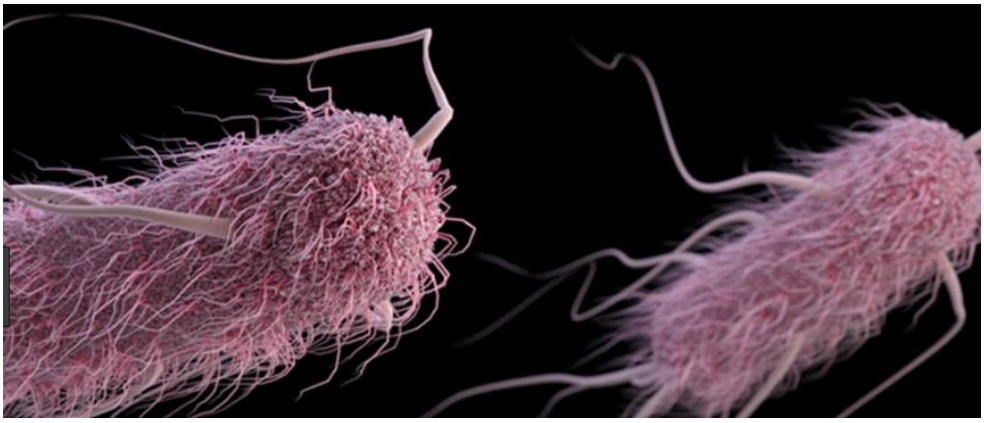
What are some other issues?

Cryptosporidiosis

A disease caused by the microscopic parasite *Cryptosporidium parvum.* It is protected by an outer shell that allows it to survive outside the body for long periods of time and makes it very resistant to chlorine disinfection. Cryptosporidiosis (also known as "Crypto") is the most common waterborne disease in the United States. The parasite is found in every region of the United States and throughout the world. While some people exhibit no symptoms, most experience diarrhea, loose or watery stools, stomach cramps, upset stomach, and a slight fever.

***Escherichia coli* Diarrhea**

Also known as "diarrheogenic *E. coli*," a disease caused by *Escherichia coli* bacteria of many different serotypes, including *E .coli* O157:H7. *Escherichia coli* can be transmitted by contaminated water or by person-to-person via the fecal-oral route. While some people exhibit no symptoms, most experience watery or bloody diarrhea, abdominal cramps, nausea, vomiting, and fever. In 2-7% of those who acquire *E. coli*O157:H7 infection, hemolytic uremic syndrome may develop, causing kidney failure and sometimes death. This syndrome occurs particularly in children under the age of 5, the elderly, and those with weakened immune systems.



What about Indiana?

(www.in.gov – data from 2016)

Counties MUST have 5 or more cases to be reported in the Indiana State Department of Health – Epidemiology Resource Center report for Infectious Diseases.

Cryptosporidiousis – is a diarrheal disease caused by microscopic parasites, Cryptosporidium, that can live in the intestine of humans and animals and is passed in the stool of an infected person or animal.
Counties: Steuben, Huntington, DeKalb, Henry, LaPorte

Gieardiasis – is a diarrheal disease caused by the microscopic parasite Giardia. A parasite is an organism that feeds off of another to survive. Once a person or animal (for example, cats, dogs, cattle, deer, and beavers) has been infected with Giardia, the parasite lives in the intestines and is passed in feces (poop). (Cockroaches can also carry this)
Counties: Hamilton, Allen, Vigo, St. Joseph, Elkhart

Legionellosis - Legionnaires' disease is an acute bacterial pneumonia with rapid onset of anorexia, malaise, myalgia, headache and rapidly rising fever, progressing to pneumonia, which may lead to respiratory failure and death. Most cases are due to poor water management.
Counties: Lake, LaPorte, Delaware, St. Joseph, Elkart, Hamilton, Marion, Allen, Vigo

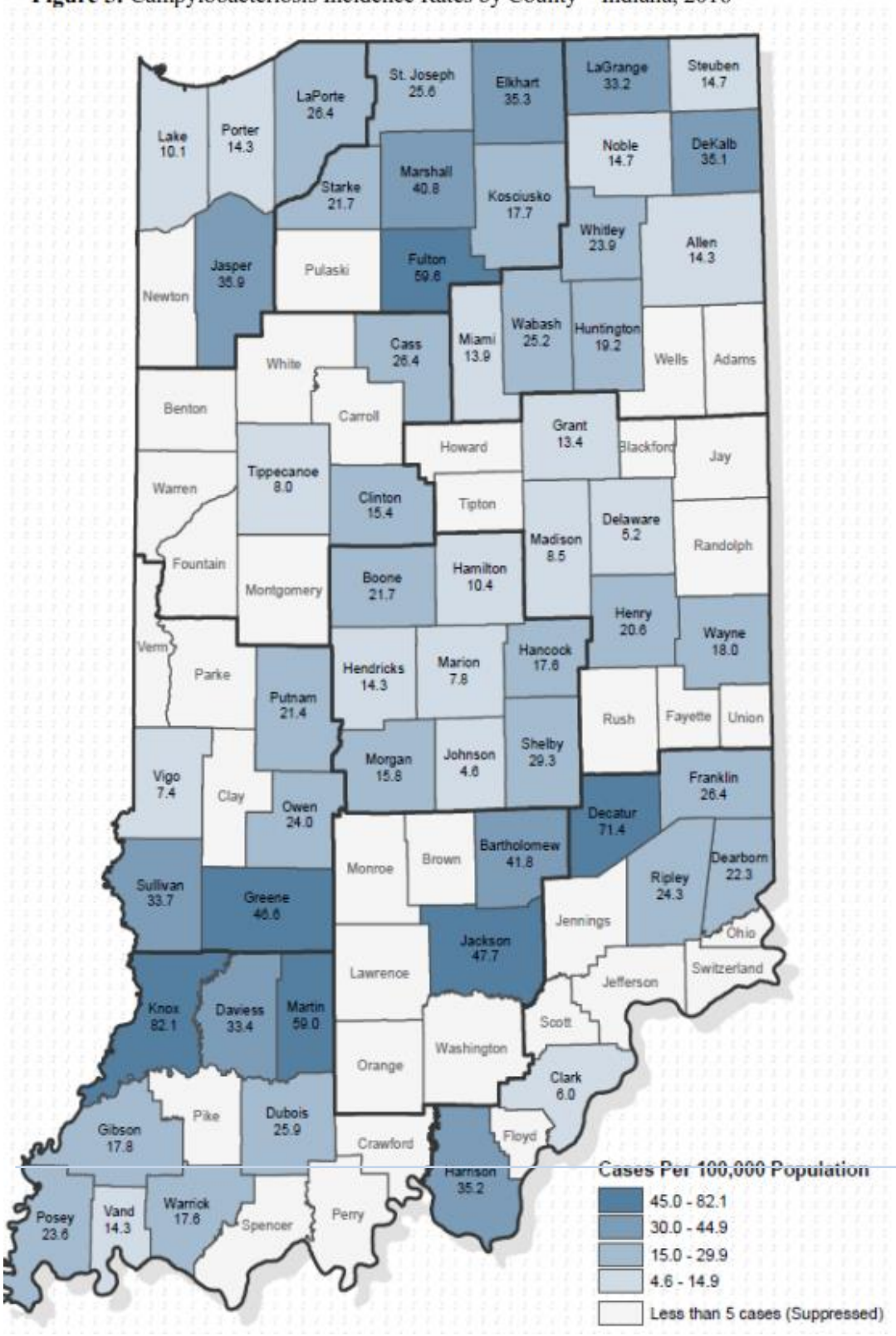
Cryptosporidiousis – is a diarrheal disease caused by microscopic parasites, Cryptosporidium, that can live in the intestine of humans and animals and is passed in the stool of an infected person or animal.
Counties: Steuben, Huntington, DeKalb, Henry, LaPorte

What about Indiana?

(www.in.gov – data from 2016)

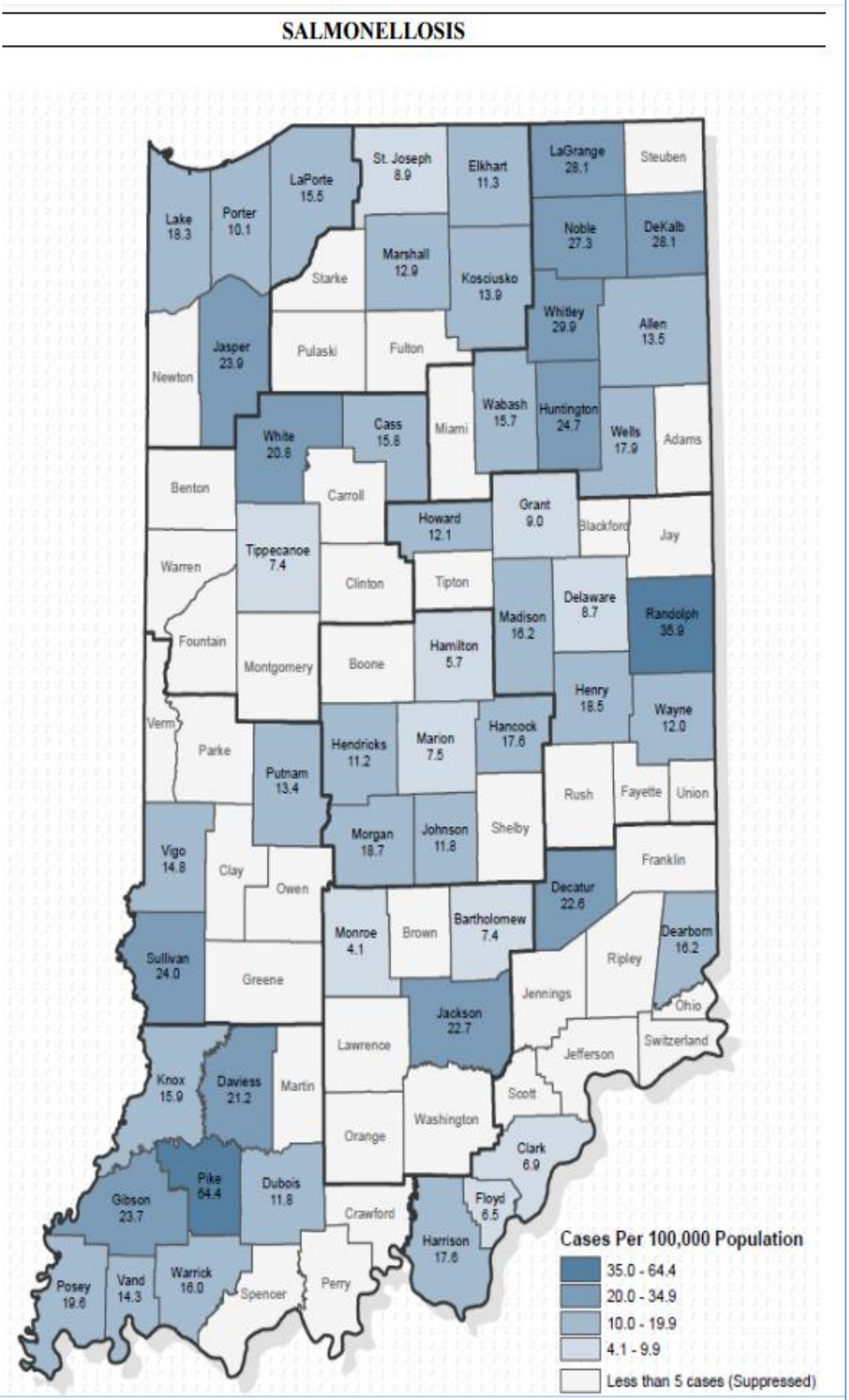
CAMPYLOBACTERIOSIS

Figure 5: Campylobacteriosis Incidence Rates by County – Indiana, 2016*+



What about Indiana?

(www.in.gov – data from 2016)

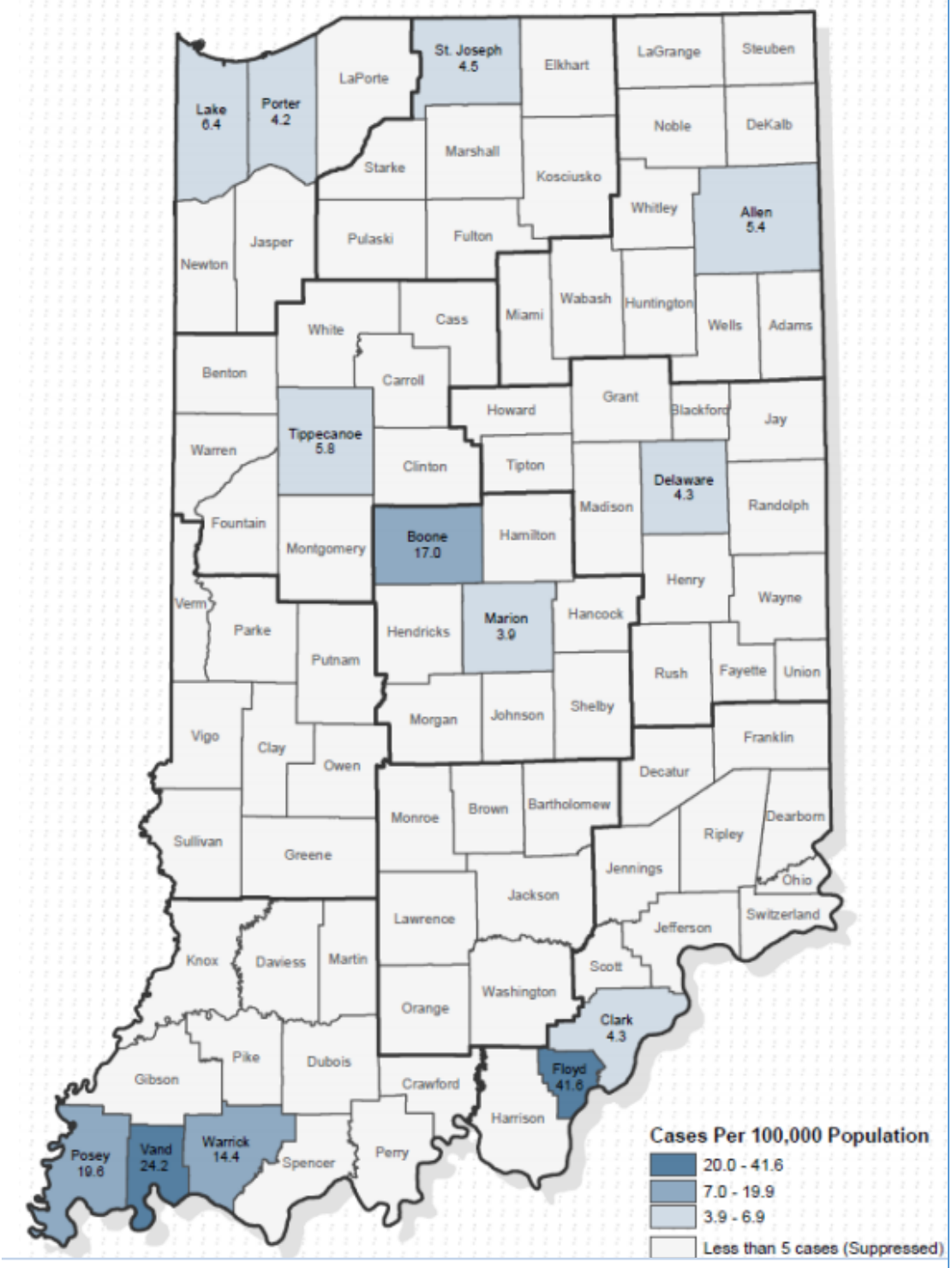


What about Indiana?

(www.in.gov – data from 2016)

SHIGELLOSIS

Figure 4: Shigellosis Incidence Rates by County – Indiana, 2016*+



What about the Pharma Cycle?

A handful of life-saving cytotoxic chemotherapy drugs exit cancer patients as active dangerous chemicals.

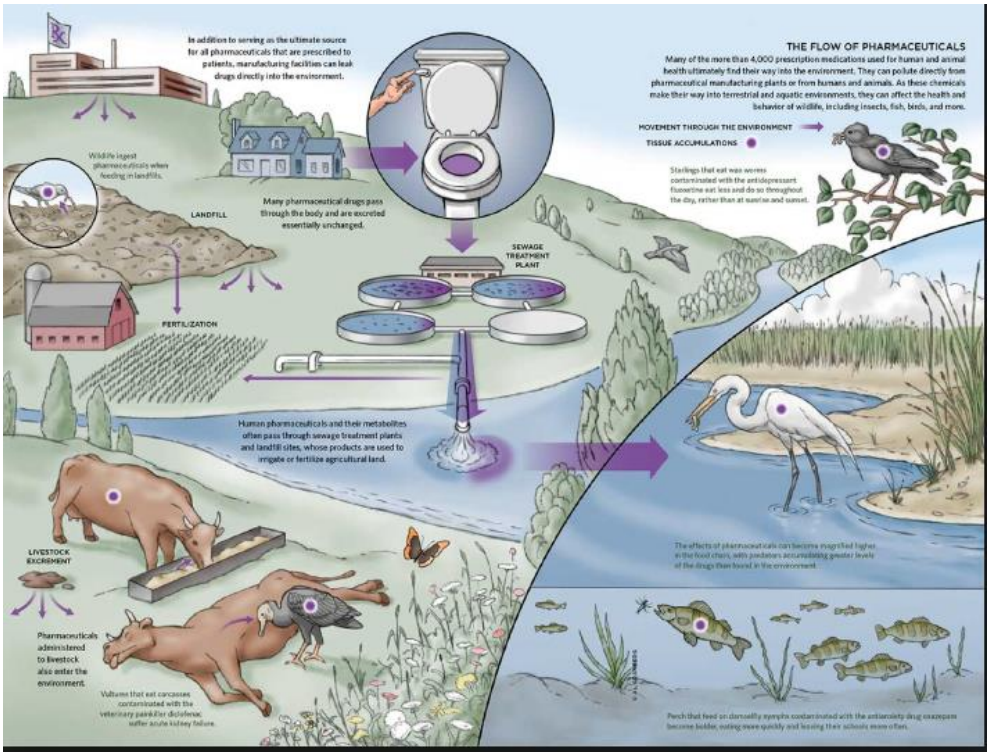
Septic systems and wastewater treatments plants cannot remove them.

Active chemotherapy chemicals in our water are a problem for all living organisms but they are a profound disaster for humans, other mammals and fish.

Cytotoxic chemicals work by causing DNA breaks and mutation, triggering tumors and other abnormalities. They are genotoxic and classified as Contaminates of Emerging Concern (CEC).

https://pharma-cycle.com/environdangers.html

(When mentioned at a meeting, I thought that sewers would help minimize this problem. It may if drinking well water...)



https://www.the-scientist.com/features/drugging-the-environment-35077

Can you be exempt from sewer hookup?

Maybe….
IC 13-26-5-2.5 http://iga.in.gov/static-documents/f/2/3/8/f2386946/TITLE13_AR26_ar26.pdf

New at the time of installation & approved by local health department

Prove from local health department that system is not "failing". This can be appealed

Owner provides district written notification of potential qualification for exemption with proof

" (d) Property owner who qualifies for the exemption provided under this section may not be required to connect to the district's sewer system for a period of ten (10) years beginning on the date the new septic tank soil absorption system was installed.
A property owner may apply for two (2) five (5) year extensions of the exemption provided under this section by following the procedures…" "However, the total period during which a property may be exempt from the requirement to connect to a district's sewer system under this section may not exceed twenty (20) years, regardless of ownership of the property."

"(g) When a property owner who qualifies for an exemption under this section subsequently discontinues use of the property owner's septic tank soil absorption system and connects to the district's sewer system, the property owner may be required to pay only the following to connect to the sewer system:"

Connection fee at the time of the original sewer

Additional costs supported by documentary evidence provided by the district

Costs to connect – equipment, labor, materials subject to inspection

What are the pro's of having a sewer system?

Personal

Gain use of your ground

Build where ever you want

Size of home is not limited to the size of the septic system

Allow more homes on large parcel

Make well water and creeks safer

Community

Economic growth & opportunity

Preserve Natural Environment

Safer Water Supplies

Lowers Health Risks

Lower Maintenance

Handle large amounts of Wastewater

The notion has been brought up that a septic system can last a lifetime versus the statement that all systems will fail. Personal view - both statements can be true. Your system will fail at some point. Failure does not mean that they will never work again, but does mean that some part to all of the system will need fixed. If it needs fixed, then technically it has failed to need to be fixed on various levels. This could mean that it keeps working after the failure as it did before. Just like a good old truck, it may still be running after 40 years, but can bet money that it has "failed" along the way and needed a thing or two fixed.

What are some common Myths about Septic Systems?

Septic systems last forever and NEVER fail or need replaced.

Septic system requires periodic maintenance – including pumping every 3 -5 years.

Absorption fields (leach fields) may need replaced every 15 - 30 years)

Washing machine water and rinse water should be discharged to the ground surface to protect the absorption field.

Washing machine water is “wastewater” that contains bacteria that could contaminate surface streams. It should be disposed of in the same manner as water from sinks and showers.

If the septic system appears to be failing, flush the septic tank with large amounts of water.

This will actually cause solids to be forced into the soil absorption system that could cause irreversible damage

https://jadeengineering.biz

Older septic systems need additives to operate most efficiently.

To date, there hasn’t been a septic system additive that makes your tank “like new” again. (http://paradisevalleyseptic.com/septic-system-myths-debunked/)

Septic Tanks are DESIGNED to last forever

The average life span of a septic tank is 20 to 30 years. Some last 50 years, but are not “designed” to be used indefinitely. https://nearsay.com/c/366638/187776/3-common-myths-about-septic-systems

You do not have to pump your septic tank.

This myth can cost you a ton of money in damages later down the line

Questions for more help and information?

Brown County Health Department

http://www.browncountyhealthdept.org/

(812) 988-2255

bchealth@browncounty-IN.us

(New Local Ordinance in process)

United States Environmental Protection Agency

https://www.epa.gov/septic

Onsite Sewage Systems Program

https://www.in.gov/isdh/23283.htm

Indiana Onsite Wastewater Professionals Association

http://www.iowpa.org/

EPA - Envrionmental Protection Agency
https://www.epa.gov/septic

NESC - National Environmental Services Center
http://www.nesc.wvu.edu/pipeline.cfm

RCAP - Rural Community Assistance Partnership
https://rcap.org/

Purdue Resources

https://www.agriculture.purdue.edu/usda/careers/

Indiana State Department of Agriculture

https://www.in.gov/isda/2368.htm

Take the Quiz!

1. What year was your home built? Purchased? Renovated?
2. Did you have an onsite wastewater system inspected before purchasing the property?
3. How many square feet is your home?
4. What type of system do you have?
5. How many flat acres do you own?
6. Do you have a pond, well, or creek?
7. What type of system do you have?
8. What type of tank do you have?
9. How many feet does your system have to be away from water sources?
10. How many feet does your system have to be away from trees?
11. What happens to the solids and wastewater that go into a properly maintained septic tank?
12. How often should my system be serviced by a professional Septic System Service Company?
13. When was the last time your system was serviced and inspected?
14. Do septic tanks have to be pumped? Has your system been pumped and when?
15. Do you have any odors or greener grass above the finger system?
16. Do you have trouble flushing toilets when you have extra company or when it rains?
17. I am planning to move or transfer my house to a family member, will mortgage companies require certification of functional septic system to approve the mortgage application
18. Does a recent certification help with the resell value of the home?
19. Should you require certification proof of any home you are considering purchasing?
20. Does the Health Department have the most current information about your system?