

Groundwater We Drink It Everyday



Dust off your cameras and start taking photographs to enter into our new contest!



Pharmaceuticals and Personal Care Products are a new class of pollutants being found in our nation's waters.



When septic systems are not maintained, they can cause many problems such as sewage back up into your yard.

Of Earth's fresh water supply, 77% is frozen in ice and glaciers, less than 1% is in lakes and rivers but 22% is found in groundwater supplies. That can be a great thing for the more than 50% of citizens, including those of southern New Castle County, that rely on groundwater for their drinking water supplies!

But what is groundwater? Imagine pouring a glass of water onto a pile of sand. The water moves into the spaces between the particles of sand. This is groundwater. Groundwater is stored in—and moves slowly through—layers of soil, sand and rock called aquifers. Aquifers typically consist of gravel, sand, sandstone, or fractured rock, like limestone. These materials are permeable because they have large connected spaces that allow water to flow through. Groundwater supplies are replenished, or recharged, by rain and snow melt. Water in aquifers may be brought to the surface naturally

through a spring or can be discharged into lakes and streams. Groundwater can also be extracted through a well drilled into the aquifer.

The idea of separate water bodies on this earth (oceans, lakes, streams, underground and atmospheric) is a myth. In truth, all water is related in what is called the hydrologic cycle, in which constant interaction exists between all sources. In fact, groundwater contributes about 30% of the stream flow in the United States. As a result, contaminating one water source leads to the contamination of others.

Many threats exist to the quality of groundwater. And of course, contamination of groundwater affects the quality of other waters in the hydrologic cycle. Rainfall can threaten

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**Appoquinimink
River Association**

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Emerging Contaminants

New Pollutants of Concern

There is a new class of pollutants that is appearing in our nation's waterways – Pharmaceuticals and Personal Care Products (PPCPs). PPCPs are any product used for personal health or cosmetic reasons or used by agribusiness to enhance growth or health of livestock. These products can include prescription and over-the-counter drugs, veterinary drugs, fragrances, vitamins, lotions and cosmetics.

Some PPCPs are not easily broken down and processed by the body or do not degrade quickly in the environment and they make their way into the soil and waterways from sewage treatment plants, animal waste, and septic systems. In many instances, PPCPs enter our sewage systems when people excrete them or wash them away in the shower or some are flushed or washed down the drain when people discard outdated or unused drugs. Sewage treatment plants are not specifically designed for PPCP removal because their detection is so new.

The United States Geological Survey surveyed 139 streams around the country and found that 80% of samples contained residues of PPCPs. While there has been no evidence found yet of human health effects from PPCPs, further research is needed to better understand these new contaminants.

To find out more about PPCPs, visit EPA's website www.epa.gov/ppcp!

What can I do about PPCPs in our waterways?

Do not flush prescription drugs down the toilet or drain unless the label or accompanying patient information specifically instructs you to do so. For information on drugs that should be flushed visit the FDA's website.

Take advantage of community drug take-back programs or household hazardous waste collection events that collect drugs at a central location for proper disposal. Call DSWA to find out when events are available in your community.

If a drug take-back or collection program is not available:

- Take your prescription drugs out of their original containers.
- Mix drugs with an undesirable substance, such as cat litter or used coffee grounds.
- Put this mixture into a disposable container with a lid, such as an empty margarine tub, or into a sealable bag.
- Conceal or remove any personal information, including Rx number, on the empty containers by covering it with black permanent marker or duct tape, or by scratching it off.
- Place the sealed container with the mixture, and the empty drug containers, in the trash.



Photo by Brian Klecan.

Natural Wonders Photography Contest!

Give us your best shot...

If you are just starting out with photography or a lifetime enthusiast---Everyone is encouraged to participate in the Natural Wonders Photography Contest!

Start taking pictures now in the following categories: Landscapes, Waterscapes, Native Wildlife, Native Plants, and Ways to Protect Our Waterways and prepare yourself for submitting your pictures to the contest next spring!

Prizes include a reception for all participants at the Gibby Center for the Arts in Middletown where the top three photographs in each category will be displayed! Cash prizes will be presented for the top winners along with other prizes to be announced later!

Visit www.apporiver.org for the official rules and more detailed information about the contest or call 302-382-0335!

Southern
New Castle County
is a beautiful place.
So get outdoors,
have fun, and take
your camera!

Septic Systems

Out-of-Sight and Out-of-Mind

Septic systems can be a major source of pollution throughout southern New Castle County. This is a surprise to most residents who don't think about what happens when kitchen, bathroom and laundry waste goes down a drain. Only when a problem occurs do homeowners realize there is a problem, and even then they don't realize that it's more than a monetary nuisance – it's a public health hazard and a serious environmental threat!

A normal functioning septic system is designed to collect, treat and dispose of wastewater on site so that it can percolate into the ground without clogging the soil or contaminating ground or surface waters. When properly sited, designed, installed and maintained, a septic system can be a cost-effective method of wastewater treatment. However, many systems are out of date, not functioning properly, or clearly failing. When these systems fail, contaminated wastewater including nitrogen, phosphorus, heavy metals, toxic chemicals, bacteria and pathogens is discharged into groundwater as well as streams, ponds and estuaries. The consequences of such effects include pollution of our drinking water supply, destruction of our wildlife habitat and reduction in recreational opportunities.

What are some signs to look for to indicate that your septic system is failing?

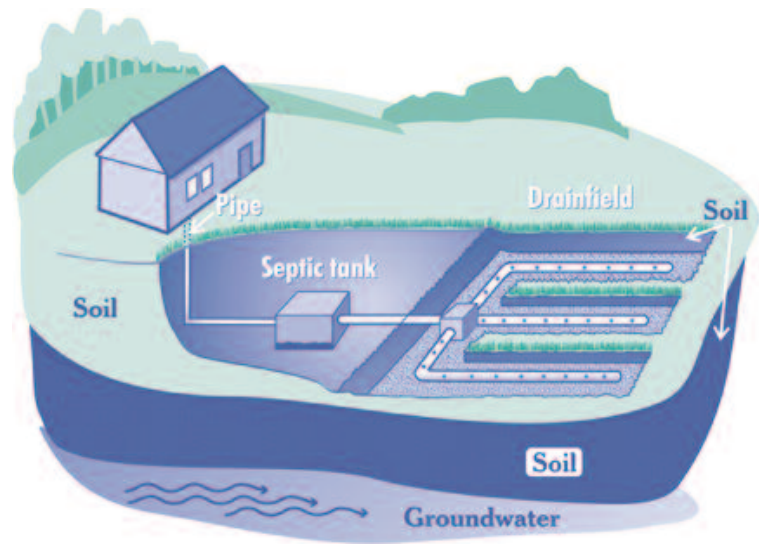
In order to catch problems with your septic tank, there are several things to keep an eye out for in and out of your home. Problems could be evident if you have any or multiple of the following problems:

- sewage backup in drains or toilets
- slowly draining sinks, tubs or toilets
- foul odors
- standing wastewater or soggy areas on the ground above or near the septic system
- excessive growth of lush, green plants over the drainage field even during dry weather
- algal blooms and excessive weed growth in nearby ponds or lakes

It's better to be safe than sorry so call the Department of Natural Resources and Environmental Control – Division of Water Resources (302-739-9947) or a licensed septic tank contractor whenever you experience problems with your system, or if there are any signs of system failure.

What can be done to prevent septic system problems?

The most important and effective things that you can do to prevent problems are to have annual inspections of your septic tank and pump out your system every three years. Just remember, while \$100 to \$250 is required to pump a septic



Septic systems can transport chemical, biological and nutrient contamination into groundwater and surface water supplies.

tank this is much less expensive than the thousands of dollars you could spend when failure occurs and replacements are needed.

There are also many key things that a household can do to help prevent septic system problems. First, watch what materials you are putting down your drains. Toxic and hazardous chemicals, fats and greases, and solid waste garbage such as tissues, cigarette butts, baby wipes, tampons and condoms have no place being disposed of down sinks or in toilets. Such materials can cause your system to fill up faster, clog and prevent the needed biological processes to occur. Also, do not use a garbage disposal or limit its use, at the least. This waste can increase the amount entering your tank by 50% causing back up and more pumping than normally suggested. Divert gutters and other water away from the drainage field because saturated soil is less effective in treating wastewater.

Groundwater

Continued from page 1

groundwater by carrying contaminants into the water cycle. This stormwater pollution can carry things like car oil, fertilizers, pesticides, or bacteria from animal waste into our waterways. Septic systems can also affect the quality of our groundwater. These systems dispose of waste from homes and businesses. Proper maintenance, construction and use can protect ground water resources. However, improper use and poor maintenance can lead to contamination of water supplies from bacteria, viruses, and other pollutants.



We need to protect our groundwater supplies because they are our drinking water sources.

Just for Fun WORD SEARCH

W C M N O I T N E V E R P A S
 T Y C A D R I N K I N G H W N
 I C R H I L A N O S R E P A O
 N L A E T N E G O R T I N Y I
 S E O U T P T P U T D T O W T
 P H A R M A C E U T I C A L P
 E Y C E E P W W N B N S F C I
 C D S I P T Y D I A T O R O R
 T R N C T U A O N E N R O S C
 I O O A D P T W W U R C Z M S
 O L I L A I E A M I O N E E E
 N O T G C D T S J R F R N T R
 K G O S S E N O M R O H G I P
 B I L D R E F I U Q A T Q C H
 I C S U R O H P S O H P S S V

- antibiotics
- aquifer
- cosmetics
- cycle
- drinking
- frozen
- glacier
- groundwater
- hormones
- hydrologic
- inspection
- lotions
- maintenance
- nitrogen
- personal
- pharmaceutical
- phosphorus
- PPCP
- prescriptions
- prevention
- septic
- stormwater
- wastewater

After you find all the words above, write the letters that were not used in the spaces below to reveal a hidden message!

_____ !

Match what you put down your drain!

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