



## **H2O Q&A: Top Questions about Water**

### **How did the May 2010 flood happen? What caused it?**

The short answer is rain – and lots of it. Experts characterize this as a 500-year rain event meaning a storm of this significance has a .2% chance of occurring in a given year. Other experts calculate it was even larger than that. Generally speaking, Middle Tennessee received an entire month's worth of rain in two days so what typically would seep into the ground, or flow calmly to our rivers, streams and tributaries unfortunately could not. Our natural environment simply could not keep up.

In areas where rain hit ground with vegetation, plant roots and soil acted like sponges -- however, even sponges can only hold so much. That's when the water flowed into the streams, overflowed banks and damaged portions of many counties. In cities, things were far worse. When a raindrop hits concrete or rooftops, it cannot soak in so it joins millions of other raindrops in our storm drains, streams and creeks. As the rain continued, the flood waters rose.

### **I've heard the term "Flash Flood"; what is that exactly and what caused the recent floods?**

A flash flood is the fastest moving and most dangerous of all floods. They appear with little warning and move quickly across the land. The quick change from calm to raging river is what catches people off guard, making flash floods extremely dangerous. Floods in Tennessee are usually the result of heavy rainfall concentrated over one area from slow-moving thunderstorms, storms that repeatedly move over the same area, or heavy rains from hurricanes and tropical storms that move inland. Dam or levee failures can also create flood events. Flash flooding is extremely powerful and can move huge amounts of debris, increasing the risk of danger. The best response to any signs of flash flooding is to move immediately to higher ground. For ways to reduce flash-flooding, visit [www.CumberlandRiverCompact.org](http://www.CumberlandRiverCompact.org).

### **What are pathogens and what are their impacts on the water now?**

Pathogens are infectious organisms often found in flood waters. They can include disease-causing agents like certain types of bacteria (such as staph), viruses (like e-coli) and fungus (such as mold and yeast). Most pathogens die off after a few days outside the body or other incubator.

**UPDATE:** TDEC believes that all middle Tennessee lakes, rivers, and streams are back to their pre-flood conditions. You should still use caution when you are in the water for large debris, especially when you are close to dams or inlets. The press release goes on to say, "It is important to note that it is not uncommon for creeks and streams to contain some level of bacteria, particularly in urban or agricultural areas. It is recommended people always wash with soap and clean water as a precaution after getting into any surface waters." Here is the original press release:

<http://news.tennesseeanytoday.com/node/5272>. And a story related to it in the Tennessean:  
<http://www.tennessean.com/article/20100528/NEWS01/5280343/Nashville-area-waterways-bounce-back-for-Memorial-Day>.

### **How can I know if the lake/stream/pond near me is safe to play/fish/swim in?**

For a while you won't, so it's best to avoid contact with flood waters if at all possible. The Tennessee Department of Conservation (TDEC) is in the process of monitoring all rivers for safety. At this time, everyone should avoid contact with rivers and streams. Oil from parking lots, trash from open dumpsters, sewage from flooded treatment plants, improperly stored chemicals and warehouse materials, cigarette butts, and disease-causing bacteria from pet and livestock manure can all make their way into our creeks, streams and rivers. As flood waters rise, rivers and over-run ponds become more toxic as sewage treatment plants sometimes flood and allow dangerous stormwater to pass. Some pollutants die off or settle out quickly but some stick around for longer periods of time. We will post a link on our homepage when TDEC's information is updated with local water quality conditions.

### **I am on a well water system. What do I need to do or worry about now?**

Within Middle Tennessee you can expect all wells have been impacted by the flood. Private wells, including those supplied by springs, should be disinfected prior to using water in the home. To disinfect wells, call TDEC for procedures at 888-891-8332 or visit [www.state.tn.us/environment/flood](http://www.state.tn.us/environment/flood) and click "[Guidance for Water Wells After Flood Events](#)". As part of that process, you will probably need to contact a well driller or pump installer. For a listing of those professionals, you can contact you TDEC local assistance center at the same number or visiting [www.tn.gov/environment/dws](http://www.tn.gov/environment/dws). If you would like to sample your well, TDEC is providing a one-time waiver for their sampling fee for people in the FEMA-designated flood area. The waiver will be honored through June 20, 2010. To ask for sampling at your home, call 1-800-851-0463, Monday through Friday; 8:00 a.m. and 4:30 p.m. Central Time. Until you can complete this process, treat well water as if you were under a boil advisory by boiling for at least 1 minute. Let the water cool sufficiently before drinking. If you are unable to boil water, strain cloudy water with a coffee filter and add 1/8 teaspoon of unscented bleach to 1 gallon of water.

### **Can I eat the fish I catch out of the Cumberland River or other places affected by the flood?**

Experts agree there is probably no reason not to eat fish at this time. Anything toxic a fish might have eaten will go through their digestive system and be excreted. However, toxins can remain on skin and in fatty tissues. So, if you decide to fish, remember to wash your catch thoroughly, discard skin, and do not eat fatty tissues or organs.

### **What's in the mud that's left behind?**

This depends on where you are – a farm, an urban area or somewhere in between – and what types of activities were occurring upstream of your location. However, as a general rule when the mud dries, bacteria will die over a period of several days. The dust left behind should not affect individuals who are not usually bothered by dust. A filter mask might be helpful to some.

### **Could I have anticipated the impact of the flooding to my neighborhood?**

Flood zones and mapping are key to anticipating the impact of floods in any area. You can better understand worse case scenarios by knowing the flood plans for your house or town. Understand, however, even experts have a difficult time of knowing exactly how floods will behave. This becomes an even greater challenge with record breaking rainfall. When we change the landscape from spongy vegetation to impervious surfaces like concrete and rooftops, we reduce the land's ability to absorb rain and handle stormwater effectively. If you want to reduce flooding and the damage it causes, maintain, preserve and restore land that collects and holds water and don't build where floods occur. You can improve your community's ability to handle floodwaters more effectively by:

- Leaving a healthy un-mowed buffer by creeks or ditches that carry water during storms;
- Constructing rain gardens to hold back initial rainfall to reduce the first rise of stormwater;

- Turning off irrigation systems prior to rainfall;
- Turning downspouts toward your yard and away from hard surfaces that carry water quickly to streams;
- Working with local officials to implement green infrastructure in our communities which will make it more resilient to floods and resistant to drought.

**Where can I obtain these flood plans to learn whether my neighborhood or home is in a flood zone?**

Flood zones and mapping can be found on the Federal Emergency Management Agency’s website at [www.fema.gov](http://www.fema.gov). Look for the “Quick Links” section where the latest Flood Maps available are listed. Use caution in interpreting though. Flood maps are often several years old and do not account for changes to flood zones caused by new development. As we add new homes or businesses to our communities, we chip away at nature’s ability to absorb the rain, increasing our risk of floods.

**What quality issues might we have now with our municipal water system?**

For now, quantity is the major concern so practice water conservation habits wherever you live. Though especially important in times of floods, water conservation is responsible behavior anytime. If you are under a “boil water advisory” or you have a private well with cloudy water, you should find safe alternative drinking water or treat any water you ingest including tooth-brushing and ice from your refrigerator ice maker.

**How do I treat water I suspect might be tainted?**

If you are under a boil advisory, boil for at least 1 minute. Let the water cool sufficiently before drinking. If you are unable to boil water, strain cloudy water with a coffee filter and add 1/8 teaspoon of unscented bleach to 1 gallon of water.

**I always thought flood insurance is a scam; would it have helped?**

In 1968, Congress created the National Flood Insurance Program (NFIP) to help provide a means for property owners to financially protect themselves. Since standard homeowners insurance doesn’t cover flooding, it’s important to know your other options for protection. The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the NFIP. Participating communities agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding. To find out if your community participates in the National Flood Insurance Program, call 1-888-379-9531 or visit <http://www.floodsmart.gov/floodsmart/>.

**Through how many inches of water is it safe to walk or drive my car?**

You should never walk or drive through flood waters. A mere six inches of moving water can knock down an able-bodied adult. Many deaths occur because people underestimate the danger of flood waters. Portions of streets, bridges and their foundations can be washed away. Many motorists, attempting to drive through standing water, have been surprised to find no bottom -- what appeared to be a puddle was a life-threatening sinkhole caused by eroding flood water. There is no exception to this rule: If an area, street, sidewalk or trail is flooded, keep out.

**Things in my home got wet from flood water. Can I get sick from touching them; should I throw everything out?**

After a flood, many household items and various construction materials (like wallboard and flooring) are thrown away because moist items can breed mold. Although solid wood furniture can usually be cleaned and repaired after flood damage, much depends on the amount of time it was under water

and what was contained in the flood waters in that area. Upholstered furniture, mattresses and carpets soak in flood-water contaminants; in most cases, these items should be thrown away. Plastic or porous items such as cutting boards, wooden spoons and baby bottles can absorb contaminants; these items cannot be safely disinfected and should be discarded. You should also throw away all food items including canned goods, that have come in contact with floodwaters. Although many household items can be cleaned and disinfected after a flood, if you suspect sewage has tainted your environment, it is generally good practice to remove those items from your home. Disinfect all affected areas and items.

### **What is the proper way to clean and disinfect tainted areas?**

A home-made solution of 1 cup of bleach per gallon of water will be effective for cleaning many items in your home. As soon as flood waters recede, disinfect all hard surfaces like floors, walls and counters with sanitizing solution. If possible, clean and dry large items outside the house to prevent the spread of contamination. Talk with an electrician to be sure that your disinfected appliances can be used safely.

For further information on clean-up see: Field Guide for Cleanup of Flooded Homes, created by the National Center for Healthy Housing at <http://www.ndhealth.gov/flood/FloodCleanupGuide.pdf>.

### **Where can I learn more about water, flood water and the impact on my neighborhood or community?**

The Cumberland River Compact will offer classes to area citizens and local officials on how to rebuild after the flood using green infrastructure techniques. These practices work in conjunction with the rivers and their natural physical, geological, and biological behaviors to reduce or eliminate negative effects from stormwater. Green infrastructure mimics the way rivers work instead of trying to ignore or suppress natural processes. Contact us for classes you can attend and ask your Mayor and County Mayor to work with the Cumberland River Compact to build back our communities stronger and more resilient than ever!

### **I've heard the TDEC Commissioner and the Mayor of Nashville say to reduce water use. How can I do that?**

In the bathroom:

- Shut off the water faucet while brushing your teeth or washing hands and face.
- Use a cup of water to rinse your tooth brush and mouth.
- Use the first cold water from the faucet and don't wait for it to get warm.
- Put an aerator on faucets to cut water use by 30% with no loss of performance.
- Shower only every two days and make them short showers.
- Put a low flow shower head on your fixtures.
- Put a half-gallon jug of water or brick in the toilet tank to reduce flushing usage.
- Allow two uses of the toilet for liquid waste before flushing.

In the kitchen:

- Switch to paper plates, bowls and cups to cut out need for washing dishes.
- Use dishwasher rarely and only with completely full loads.
- If hand washing your dishes, use a pail of water to rinse.
- Rinse fresh foods in a bowl of water instead of running water.

In the laundry:

- Postpone all nonessential clothes washing.

- If you must wash clothes, wash only full loads with lowest water settings.
- Postpone all nonessential cleaning in home, vehicle or yard.

In the yard:

- Turn off all irrigation systems at home and at work.
- Postpone all watering of plants.
- Do not wash your car at home or in commercial car washes.
- Do not use water to wash sidewalks or driveways.
- Use the water from your dehumidifier to water your plants.
- Install a rain barrel to collect irrigation water from roof runoff.

Also see, Nashville Metro Water Services for water conservation: <http://www.nashville.gov/water/>