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Is My Water Safe to Drink?
Rainwater Sanitization, By Ken Blair, RainBank

Sanitization seems to be a most elusive and complicated topic in Rainwater Harvesting for the home owner, as well as for the designer or operator. There are no general definitive answers as to what device or treatment is appropriate for all systems. **The main question is "When is my water safe to drink?"**

Presently, thousands of people die or become gravely ill due to lack of clean water throughout the world. Rainwater is generally a safer potable source than surface water; however it may carry pathogens that could pose a health risk.

While water is relatively easy to sanitize, one must consider for what the water is being treated and to what level disinfection is needed. The safe drinking water Act of 1974 was enacted to protect public health by regulating the nation's public drinking water. The EPA is authorized by this act to set standards for drinking water (http://water.epa.gov/lawsregs/rulesregs/sdwa/currentregulations.cfm). State agencies and others such as Underwriter Laboratories, Water Quality Association and American Water Works Association offer their interpretations of these guidelines.

Government agencies like the EPA or State health departments do not regulate non-public potable water systems. Therefore, to protect the consumer, it is up to the designer/installer, owner or operator to insure that the system is properly installed and maintained. The EPA does not require water supplies for non public use to be tested at this time; however the EPA does recommend that annual testing of private wells be conducted to insure the quality of the water meets minimum federal and state standards. It would also be advisable for harvested rain water to be tested once per year and strive to meet these minimum standards.

Devices and techniques such as screening, sedimentation, filtration, absorption, ultraviolet light exposure, reverse osmosis, Ion exchange and chlorination are all methods used for treatment of rainwater. There are organizations such as the NSF (National Safety Foundation) that certify devices and components for water treatment and only these certified devices are recommended.

Different types of filtration will remove specific types of microorganisms and not all microorganisms are removed by cartridge filters.

Filtration methods:

- Reverse Osmosis: will remove Protozoa, cysts, bacteria and viruses,
- Absorption (activated carbon): removes organic and synthetic contaminants and is effective in removing chlorine,

- UV treatment: effective in clear water and therefore should be used downstream of filtration devices.

It is recommended by most agencies that both filtration and absorption be sized properly and utilized in water treatment. ANSI/NSF Standard 55 provides outcome based testing requirements for UV devices. NSF/ANSI 2007 Class A certified devices are designed to control pathogens and are frequently used in treatment of in-home drinking water system. While UV is an effective method of disinfection, only a class A device emits enough dosage of UV to be certified for drinking water.

Rainwater harvesting is a viable alternative to traditional water supplies and may be necessary to meet our worldwide growing demands for fresh, clean drinking water. Rainwater collection and treatment can minimize the ill effects of water born diseases in developing countries and provide a safe potable source for those who do not have access to clean water. Implementing rainwater harvesting directly benefits our communities by reducing demand on our public water supply systems and aquifers.

While rainwater is considered to be relatively clean, it does require that treatment be considered. Prior to purchasing or installing a water treatment system, home owners should consider testing of the source water by a certified lab, then testing again after system installation. Use only ANSI/NSF certified components and follow recommendations of certifying agencies. Use only licensed, accredited designers/ installers or seek information from knowledgeable agencies. A rainwater harvesting system that is properly installed, operated, and maintained will provide safe, high quality water free of mineral hardness and discoloration sometimes present in well water. Regular inspection, testing, and maintenance will insure that the system will continue to produce water of a quality that matches or exceeds alternative sources.

About the author:
Ken Blair is the principal and founder of RainBank Rainwater Catchment Systems.

A designer for rainwater collection and storage and all Class B water systems, Ken has designed and installed residential and commercial systems in the northwest United States for more than 6 years. Additionally, he is an ARCSA Certified designer, installer and Life Member.

Ken is passionate about having a positive impact on the environment and is also a founding director of BANK-ON-RAIN whose mission is to create grassroots solutions for rainwater collection for consumption and agriculture in developing areas of the planet. Bank-on-Rain is a member of Peer Water Exchange, a participatory decision-making system to select, fund, manage, monitor, and share grassroots water and sanitation projects worldwide efficiently, effectively, and transparently.

Contact Ken@RainBank dot info for more information. Or subscribe to RainBank's informative newsletter (your information will not be shared or sold).