

WATER, WATER, EVERYWHERE - BUT IS IT SAFE TO DRINK?

Water is the most important substance in our lives. Our bodies are 60-80% water, we need water for drinking, cooking, bathing and cleaning. Yet, as important as water is to all of us, usually we take it very much for granted.

Every time we turn on a water tap in our home or in our recreational vehicle, we expect water to come flowing out. Normally, we take the safety of this water as much for granted as the water itself. This is understandable, since most of the population is presumably supplied with safe water – water that has been purified by the area water companies. Because we are so accustomed to being constantly supplied with safe water, we often forget that ‘problem waters’ exist in many other places.

Actually, we can take safe water for granted only when we are at home, and not when we are in our ‘home-on-wheels’.

This article sets out to answer the questions many travellers most frequently ask about the many different kinds of water and water problems they have encountered. It will explain why the practice of filling water tanks from city taps – or even carrying bottled water – does not guarantee a continually safe water supply. It will present the reasons why the UK Environmental Health Departments require cities to purify their water. It will also describe the purification methods used, so those same principles can be used by the RV owner to ensure the safety of his water while travelling.

ARE ALL WATER SUPPLIES PURIFIED?

The answer is no. Governments in some countries do not require the water companies to purify their water and some times when they do the standards are not as high as we expect here in the UK.

Even purified water can be contaminated by the time it reaches the tap so water quality should never be taken for granted - always check it first!

Water problems throughout our country are increasing every day. In areas with heavy industry, using water for processing, there is often

danger of chemical and other types of pollution.

Many RV travellers have seen slime growing inside water tanks; have encountered water which smelled or tasted oily, fishy or musty; have consumed coffee and other beverages of poor quality. Some have experienced upset stomachs, diarrhoea and worse. These can all be caused by impurities in the water which travellers find in the UK and Europe as well as throughout the rest of the world.



IS COOL, CLEAR, SPARKLING WATER SAFER THAN MUDDY OR DIRTY WATER?

Not necessarily. A muddy water source that looks very bad might be completely harmless. On the other hand, a clear, cool mountain stream could be quite dangerous.

Bacteria and viruses are so small in size that they cannot be seen by the naked eye. Many bacteria are in the 1 micron range, only 1/25,000 of an inch. Viruses are many, many times smaller and can be detected only by sophisticated methods. Therefore, they can be consumed without any visual warning.

Even in the mountain areas of the UK and Europe, cool, clear mountain streams can be polluted. Here the pollution is not caused by humans or industrial wastes, but by nature. The run-off of animal wastes contributes

to the problem, as well as the inclination of some animals to seek out a stream in which to die and decompose.

Another factor to remember is that any water source can become contaminated overnight – without anyone being aware of it! That’s why travellers should take an added precaution by treating *all* of their water.

According to the UK National Rivers Authority (NRA), ‘The quality of surface water constantly changes. Natural processes which affect water quality are the dissolving of minerals, sedimentation, filtration, aeration, sunlight and biochemical decomposition. Natural processes may tend to pollute and contaminate or to purify the water; however, the natural processes of purification are not consistent or reliable.’

CAN'T WE JUST FILL OUR WATER TANK OR WATER BOTTLES WITH CITY WATER?

The city disinfects water by adding a very low concentration of chlorine (higher chlorine concentrations cause objectionable tastes). The small amount of protective chlorine in the city water will dissipate during travel because of the air in the tank and the sunlight heating the water.

Some organisms in city water that are resistant to the low chlorine concentrations continue to survive in a sort of suspended animation. As the chlorine dissipates, they can begin to grow and reproduce. This is particularly true with nuisance organisms that produce slime and musty tastes.

The air affects bottled water in much the same way, bringing impurities and slime-formers into the water bottle each time it is opened. To prevent such problems, the traveller can take the simple and inexpensive precautions described later in this article.

IS BAD-TASTING WATER ALWAYS UNSAFE WATER?

Not necessarily. It may or may not be. Most bad-tasting water is caused by natural organic and inorganic impurities - unpleasant, but not necessarily unsafe.

Many wells in the UK contain the bad-tasting, but generally harmless impurities, iron and sulphur. Have you tasted the waters in Bath!

ISN'T IT SAFE TO USE CAMPSITE WATER THAT'S MARKED 'DRINKING WATER'?

On some sites the 'drinking water' tap might not be necessarily connected to the local mains supply. The approval for 'drinking water' may often mean that a single sample of water from that supply has been tested and was reported to contain no bacterial contamination at the time of sampling, which may have been many months or even years ago.

It's important to note that perhaps only *that one sample* is known to be safe – and there is no way to tell when that sample was analysed. If a campsite continuously has its water supply tested and inspected, and has located and constructed the well properly, then there is less risk. However, the wise traveller always chemically treats all water whenever he's not hooked directly to city water which he is certain contains chlorine.

WHAT PURIFICATION METHOD CAN A TRAVELLER USE WITH CONFIDENCE?

Since the traveller is generally not an expert in water treatment and certainly does not have sophisticated water-testing equipment, the U.S. Environmental Protection Agency (EPA) suggests a disinfection method known as super-chlorination/dechlorination. 'By this method, chlorine is added to the water in increased amounts (superchlorination) to provide a minimum chlorine residual of 3.0 ppm (parts per million) for a minimum contact period of five minutes. Removal of the excess chlorine (dechlorination) follows to eliminate objectionable chlorine tastes. Dechlorination equipment is commercially available.' This procedure will assure the traveller of continuing protection from bacteriological or viral contamination from any common water source.

There are many water treatment additives available to the RV owner, in liquid and tablet form, which can be added to the fresh water storage tank as and when required. Thousands of people with wells depend on water treatment additives for protection from harmful water-borne

organisms. A traveller can easily add one of these to a water tank when adding water. The dosage as recommended by the suppliers of these additives should kill most of the harmful bacteria, viruses and slime-forming organisms.

Adding water treatment chemicals to your storage tank is similar to the procedure followed by most water companies. However, they have highly sophisticated equipment and skilled staff to determine the precise amount of contamination in the water and add chlorine accordingly. The city water storage tanks and basins allow the chlorine to be in contact with the water for a long period of time to provide a great degree of disinfection. Thus, these water companies can maintain the chlorine level at a point just above the minimum amount needed, preventing the chlorine taste in the water from becoming too disagreeable.

Because chlorine imparts an offensive taste and odour, and dosing with chemicals by RV owners tends to lead to a high concentration of this chemical, most people object to water treated this way. However much of the smell and taste can be removed by using an activated carbon water filter.

IS THERE A DIFFERENCE BETWEEN WATER FILTERS?

The average filtering device is designed to generally 'clean-up' water. Depending upon its construction, it may remove some off-tastes or some physical impurities such as dirt.

One of the best water filter systems on the market, currently, is the Nature Pure Filter System. This filter is sold in the UK by General Ecology Europe Ltd.

Another reliable water filter system is the Everpure QC2-ADC, which is fitted as standard equipment on many models in the Winnebago and Manaco ranges of American motorhomes.

The Everpure is a pre-coat activated carbon filter that provides microfine filtration to supply refreshing, sparkling clear water for drinking and cooking purposes. It also physically removes cysts which are the cause of amoebic dysentery.

The QC2-ADC Water Filter will not allow any variance in the *quality* of the water passing through it. The flow of water eventually slows down as the filter removes the dirt, cysts, etc, but the high quality of the water is always maintained. When the flow

of water becomes too slow for convenience, the traveller knows a cartridge replacement is required.

Water filters are designed to do just what their name implies - filter. They do not provide 'safe' water because they do not destroy bacteria and viruses. Even as fine a device as the Everpure Filter cannot, by itself, provide water that is bacteriologically and virally safe.

A *water purification system*, using superchlorination/dechlorination is essential if the traveller is to have a water supply free from harmful bacteria, viruses and cysts, as well as dirt and objectionable tastes and odours. With the Everpure Water Purification System all of this can be achieved, including the removal of chlorine for a cost of less than a penny per gallon of water.

IS A WATER PURIFICATION SYSTEM DIFFICULT TO INSTALL?

On many new RVs, a water purification system is standard equipment and is already installed. Almost all manufacturers offer a water purification system as an option and will install its filter at the factory when a recreational vehicle is ordered.

For the traveller already owning an RV, it is a simple thing to incorporate the same purification system that quality conscious RV manufacturers recommend and use as standard equipment. With the aid of common household tools, you merely cut the cold water line under the kitchen sink and install the filter. Chlorine is added manually to the water tank to provide disinfected water from all outlets. The filter then dechlorinates and polishes the cooking and drinking water.

Other types of water filters either hook onto the tap or require the installation of a third tap to provide an economical filter life. Those which hook up to the entire water supply system severely shorten filter life by unnecessarily filtering shower and toilet water.

CAN WE USE ANY WATER SUPPLY IF WE HAVE A WATER PURIFICATION SYSTEM?

As long as the water is properly treated when the tank is filled, it is safe to use city water or water from 'approved' sources.

One should always be cautious about using water from lakes, streams and ponds, or water immediately

downstream from an industrial waste system or sewage disposal plant. These sources could possibly contain chemical-pollutants. We know of no 'point of use' water purification system being marketed today that can assure protection against chemically polluted water.

WHAT ABOUT SULPHUR OR 'RED' WATER

Sulphur water turns silverware black, discolours walls and cabinets above the sink and has the very distinctive smell of rotten eggs. It is water with hydrogen sulphide gas dissolved in it. Contrary to the old wives' tale, sulphur water *is not* 'good for you'. Actually, much hydrogen sulphide is the by-product of bacteria which thrive on sulphur compounds.

Since the hydrogen sulphide gas is dissolved in the water, it cannot be easily filtered. However, by adding chlorine to the water the traveller oxidizes the gas and changes it into a filterable particle. Therefore, superchlorination and fine filtration can transform sulphur water into taste-free, odour-free water suitable for cooking and drinking.

'Red' water is caused by iron. It will stain sinks, fixtures, dishes and clothes. Iron can appear in several forms. When it occurs in particulate form it can easily be removed by a filter. However, when it appears as iron bacteria or in a dissolved state, it must first be changed to a filterable particle form. This is accomplished through superchlorination. Then, through dechlorination it can be removed from the water.

HOW CAN SLIME, ALGAE, OILY TASTES, ODOURS, ETC, BE REMOVED FROM A 'USED' WATER SYSTEM?

First, the system must be cleaned to get rid of clinging materials and sediment.

To remove clinging oils, films and slime, the entire water system should be flushed using a suitable tank cleaning solution. The solution should be run at full force through all outlets in the vehicle. This means opening the taps in the shower, the lavatory and the sink. The water tank is then refilled with clear water and the entire system rinsed by running the clear water through all outlets. Merely filling and draining the water tank alone will not do a thorough job. For badly contaminated water systems this procedure may have to be repeated many times, until the water runs clear and any smell and bad taste have been cleared.



After the system is relatively clean, it can be disinfected with one of the proprietary fresh water tank cleaning additives. should be individually opened to allow the chlorine solution to run through it until the chlorine smell is noticeable. This procedure is repeated at one-hour intervals until the chlorine smell is immediately noticeable.

Next, the water tank is filled with fresh water and the entire system and all the taps flushed thoroughly. Thereafter, every time water is added to the tank, it should be chlorinated to keep the water safe and to prevent unsanitary conditions from developing.

SUMMARY

Because many travellers rely on the city to supply safe water, they don't consider the simple precautions that must be taken whenever they disconnect from that city supply.

To make travelling in a recreational vehicle safer, more comfortable and more fun, a water purification system is as vital as the wheels on the trailer.

EVERPURE WATER PURIFICATION SYSTEM

The Complete system includes Everpure QC2-ADC Water Filter with one disposable 'quick-change' ADC Filter Cartridge, mounting bracket, liquid chlorine dispenser and chlorine test kit.

These six features make the Everpure System one of the leading water filter systems for recreational vehicles...

1. Allows you to make your RV water supply free from harmful bacteria, viruses and other organisms ... using the superchlorination method suggested by the U.S. Environmental Protection Agency (EPA).
2. Removes amoebic cysts that cause dysentery.
3. One micron filtration (capable of removing a speck of coal dust) provides sparkling clear, refreshing water for drinking and cooking purposes.
4. Exclusive MICRO-PURE filtering material (containing a high percentage of activated carbon) removes offensive tastes and odours of chlorine, sulphur and iron, plus those which are fishy, mouldy or detergent-like.
5. Continuous filtration without fear of secret failure ... cartridge replacement is indicated when flow of water becomes too slow for convenience.
6. Recommended and used by leading RV manufacturers ... your guarantee of reliable performance. Equip your present RV, or insist that your new vehicle be factory-equipped with a new EVERPURE System which includes the QC2-ADC 'Quick Change' Water Filter.

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